SUGAR BULLETIN No. 25.

DEPARTMENT OF AGRICULTURE,
BRITISH GUIANA.

FIELD EXPERIMENTS WITH SUGAR CANE, XXV.

THE VARIETY AND FERTILIZER POSITION OF THE SUGAR INDUSTRY, XXII.

REPORT ON THE SUGAR EXPERIMENT STATIONS FOR THE YEAR 1956.

THE "DAILY CHRONICLE," LTD., GEORGETOWN, DEMERARA.
1957.

COMMONWEALTH MYCOLOGICAL INSTITUTE
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FIELD EXPERIMENTS WITH SUGAR CANE, XXV.

INTRODUCTION.

The field experiments reaped in 1956 consisted of seventy-two (72) Cane Variety Experiments, three (3) experiments on the Growth and Ripening of four 'type' cane varieties, and sixteen (16) experiments involving fertilizers and soil amendments.

RAINFALL.

The rainfall at the Sugar Experiment Station during 1956 was 123.87 inches which is almost identical with that of the previous year and 20.67 inches higher than the average annual rainfall over the period 1921-1955.

The 1956 rainfall distribution (see Table below) shewed the rainfall during the second half of the year to be considerably higher than that of the first half, which is unusual. In fact, each of the six months of the second half of the year had a rainfall in excess of the average while in four of the months of the first half of the year, the rainfall was below average. The heaviest rainfall month was December closely followed by June. From the point of view of cane growth, the distribution was good but it would have been better had somewhat drier conditions prevailed during March and the first half of May and also in September and August.

It should be noted that 1956 is the ninth consecutive year that rainfall in excess of the annual average has been recorded at the Station.

Comparison of the Monthly Rainfall at Sophia Experiment Station for 1956 with the average for 1921—1955.

Month.	Actual Rainfall 1956. Inches.	Average Rainfall 1921—1955. Inches.	Excess or Deficit Inches.
January	9.44	10.72	— 1.28
February	3.93	5.11	— 1.18
March	7.16	5.01	2.15
April	3.93	7.05	— 3.12
May	13.72	12.73	.99
June	13.53	14.85	— 1.32
July	17.24	11.82	5.42
August	12.91	8.00	4.91
September	12.68	3.22	9.46
October	4.79	3.87	.92
November	6.87	6.54	.33
December	17.67	14.28	3.39
Total	123.87	103.20	20.67

1. VARIETY TRIALS, 1956.

BY

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AND

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The results of the 1956 series of Variety Trials are presented and discussed under the following captions :—

A. Variety Sorting Trials.

B. Plant Cane Variety Trials.

C. First Ratoon Variety Trials.

D. Second Ratoon Variety Trials.

E. Variety Performance Summary.

F. General Summary and Recommendations.

A. VARIETY SORTING TRIALS.

Varieties for Sorting Trials reaped in 1956 fall into four categories as follows :—

i. Barbados Seedlings. (B. Series). These consist of new varieties bred and raised by the B.W.I. Central Cane Breeding Station and selected for trial in British Guiana after having first undergone preliminary field testing in Barbados.

ii. Demerara-Barbados Seedlings. (D.B. Series). These are seedlings raised in British Guiana from "fuzz" forwarded from the B.W.I. Central Cane Breeding Station, Barbados, from crosses which might be expected to produce progeny suited to local conditions. The selection of seedlings for nursery extension and subsequent sorting trials is made jointly by members of the staff of the Central Cane Breeding Station and of the British Guiana Sugar Experiment Station.

iii. Demerara Seedlings (D. Series). These seedlings are obtained from a limited number of crosses made at the British Guiana Sugar Experiment Station.

iv. Other Varieties. This category consists of varieties imported from other countries, or of seedlings raised locally from fuzz obtained from other countries. In this connection, two sorting trials were reaped in 1956 consisting of a number of selected seedlings from the fuzz of crosses made in Mauritius for Dr. H. Evans of Bookers Sugar Estates Ltd.

The ten (10) Variety Sorting Trials reaped in 1956 are classified according to cycle, series, soil type and location as follows:—

SORTING TRIALS, 1956.

Cycle.	Series.	Soil Type.	Location.	Index Nos. of Trials.
Plants	B. 1951 Series	Clay Soils	Sophia	133.
	B. 1951 Series	Pegassy Clay	Uitvlugt	135.
	D.M. 1953 Series	Clay Soils	Sophia	132, 134.
First Ratoons ..	B. 1950 Series	Clay Soils	Sophia	104.
	B. 1950 Series	Pegassy Clay	Uitvlugt	107.
	D. 1952 Series	Clay Soils	Sophia	105, 106.
Second Ratoons ..	B. 1949 Series	Clay Soils	Sophia	82.
	B. 1949 Series	Pegassy Clay	Uitvlugt	83.

TABLE I— **Results of Plant Cane "Variety Sorting" Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre.		Trial No.
					Tons.	% Mean.	
	Sophia, Field 13 West "B" Reaped 28.4.56 at 11.25 months. Rainfall :—100.11 inches.						
MEANS OF 4 PLOTS :	*B. 41227	56.88	14.19	86.9	8.07	142.58	132
	D.M. 1/53	52.03	13.14	87.1	6.84	120.85	
	D.M. 51/53	46.83	14.25	86.0	6.67	117.84	
	D.M. 6/53	51.78	12.51	85.0	6.48	114.49	
	D.M. 4/53	50.38	12.63	85.7	6.36	112.37	
	D.M. 18/53	48.45	12.93	84.9	6.26	110.60	
	D.M. 22/53	56.13	10.35	80.3	5.81	102.65	
	D.M. 27/53	45.03	12.89	85.9	5.80	102.47	
	D.M. 42/53	45.03	12.56	82.6	5.66	100.00	
	D.M. 8/53	46.67	11.83	82.0	5.52	97.53	
	D.M. 25/53	48.37	11.33	82.9	5.48	96.82	
	D.M. 15/53	48.56	11.19	82.5	5.43	95.94	
	D.M. 16/53	43.04	12.18	85.0	5.24	92.58	
	D.M. 49/53	45.50	11.29	84.3	5.14	90.81	
	D.M. 46/53	44.87	11.34	80.2	5.09	89.93	
	D.M. 21/53	54.48	9.21	76.8	5.02	88.69	
	D.M. 38/53	42.50	11.52	82.8	4.89	86.40	
	D.M. 41/53	43.02	10.82	80.4	4.65	82.16	
	D.M. 33/53	45.03	10.24	80.7	4.61	81.45	
	D.M. 7/53	47.85	8.55	75.4	4.09	72.26	
	Mean :				5.66	100.00	
	Significant Difference, 20:1:				.93	16.43	
	Sophia, Field 13 West "A". Reaped 4.5.56 at 11.50 months. Rainfall :—101.26 inches.						
MEANS OF 4 PLOTS :	*B. 41227	60.83	15.45	89.7	9.40	121.60	133
	B. 51116	60.69	15.03	89.9	9.12	117.98	
	B. 5121	65.86	13.76	86.2	9.06	117.21	
	B. 5124	43.32	15.93	90.3	8.62	111.51	
	B. 51131	55.35	15.30	89.8	8.47	109.57	
	B. 51353	60.94	13.64	86.7	8.31	107.50	
	B. 51183	60.38	13.23	88.0	7.99	103.36	
	B. 51355	62.52	12.74	83.9	7.96	102.98	
	B. 51259	56.66	13.93	85.3	7.89	102.07	
	B. 51129	51.98	15.05	89.6	7.82	101.16	
	B. 51167	56.05	13.64	86.4	7.64	98.84	
	B. 51211	55.99	13.13	87.8	7.35	95.08	
	B. 51311	53.43	13.38	85.5	7.15	92.50	
	B. 51143	54.48	13.00	85.1	7.08	91.59	
	B. 51134	48.12	14.66	87.7	7.05	91.20	
	B. 51105	48.23	14.48	88.4	6.98	90.30	
	B. 51321	48.54	14.20	88.5	6.89	89.13	
	B. 51192	48.66	14.09	87.3	6.86	88.75	
	B. 51190	48.88	14.02	87.3	6.85	88.62	
	B. 51156	48.79	12.73	82.7	6.21	80.34	
	Mean :				7.73	100.00	
	Significant Difference, 20:1:				1.24	16.04	

* **Standard Cane.**

TABLE I (Contd.)—**Results of Plant Cane "Variety Sorting" Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre.		Trial No.
					Tons.	% Mean.	
	Sophia, Field 16 West "B". Reaped 4.8.56 at 14.00 months. Rainfall :—142.09 inches.						
MEANS OF 4 PLOTS :	*B. 41227	64.52	11.24	78.7	7.25	130.63	134
	D.M. 174/53	55.67	11.60	81.2	6.46	116.40	
	D.M. 123/53	55.04	11.66	83.3	6.42	115.68	
	D.M. 179/53	56.33	11.13	79.6	6.27	112.97	
	D.M. 163/53	58.67	10.67	80.7	6.26	112.79	
	D.M. 110/53	50.13	12.15	83.1	6.09	109.73	
	D.M. 150/53	49.21	11.72	85.6	5.77	103.96	
	D.M. 112/53	48.47	11.66	82.3	5.65	101.80	
	D.M. 169/53	51.22	11.03	81.5	5.65	101.80	
	D.M. 135/53	49.14	11.31	82.6	5.56	100.18	
	D.M. 162/53	45.94	12.01	84.1	5.52	99.46	
	D.M. 129/53	43.03	12.62	84.8	5.43	97.84	
	D.M. 116/53	49.92	10.80	78.0	5.39	97.12	
	D.M. 145/53	46.30	11.16	82.3	5.17	93.15	
	D.M. 115/53	47.92	10.72	77.8	5.14	92.61	
	D.M. 131/53	43.67	10.71	76.8	4.67	84.14	
	D.M. 160/53	43.50	10.73	77.4	4.66	83.96	
	D.M. 154/53	46.55	9.97	77.8	4.64	83.60	
	D.M. 143/53	52.78	8.69	85.7	4.59	82.70	
	D.M. 130/53	41.98	10.66	79.8	4.47	80.54	
	Mean :				5.55	100.00	
	Significant Difference, 20 : 1 :				.90	16.22	

*** Standard Cane.**

TABLE I.—(Contd.)—**Results of First Ratoon "Variety Sorting" Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre.		Combined results for 2 Crops, Plants and 1st Ratoons.		Trial No.
					Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.	
	Sophia, Field 13 East "B" Reaped 21.3.56 at 11.50 months. Rainfall :—106.72 inches.								
MEANS OF 4 PLOTS:	B. 50112	48.43	14.54	89.6	7.04	134.10	B. 49119	13.16	104
	B. 5037	42.77	16.06	87.6	6.87	130.86	B. 50112	13.03	
	B. 49119	47.40	14.23	88.4	6.74	128.38	*B. 41227	12.85	
	*B. 41227	45.26	14.29	89.7	6.47	123.24	B. 50267	12.83	
	B. 50267	45.60	14.20	87.4	6.47	123.24	B. 5037	12.15	
	B. 50115	43.38	13.97	86.6	6.06	115.43	B. 50135	11.98	
	B. 50135	40.64	14.67	89.8	5.96	113.52	B. 50155	11.72	
	B. 50155	47.18	12.25	84.4	5.78	110.10	B. 50347	11.66	
	B. 50268	40.95	13.63	87.9	5.58	106.29	B. 50115	11.46	
	B. 50347	46.86	11.79	82.8	5.52	105.14	B. 50268	10.89	
	B. 50352	43.37	12.00	83.8	5.20	99.05	B. 50311	10.74	
	B. 50109	42.35	12.20	85.2	5.16	98.29	B. 50345	10.67	
	B. 50311	37.87	13.34	87.3	5.05	96.19	B. 50352	10.62	
	B. 50345	36.83	13.60	86.8	5.01	95.43	B. 5011	10.38	
	B. 50153	35.80	13.85	88.7	4.96	94.48	B. 50109	10.05	
	B. 5011	37.02	13.33	86.2	4.93	93.90	B. 50126	9.78	
	B. 5019	36.68	13.09	85.4	4.80	91.43	B. 50153	9.77	
	B. 50126	31.00	15.25	90.5	4.73	90.10	B. 5019	9.76	
	B. 5047	36.42	12.84	85.3	4.67	88.95	B. 50141	9.43	
	B. 50166	33.32	13.08	87.4	4.36	83.05	B. 50370	9.13	
	B. 50377	30.88	13.79	86.1	4.26	81.14	B. 50377	9.02	
	B. 50141	34.68	12.04	78.2	4.17	79.43	B. 5047	8.95	
	B. 50210	34.38	11.77	80.1	4.05	77.14	B. 50166	8.91	
	B. 50370	34.64	11.27	81.4	3.90	74.29	B. 50210	8.51	
	B. 5073	37.84	9.50	82.4	3.59	68.38	B. 5073	7.93	
	Mean:				5.25	100.00			
	Significant Difference, 20 : 1:				1.21	23.05			
	Sophia, Field 5 East "B." Reaped 23.8.56 at 12.75 months. Rainfall :—132.50 inches.								
MEANS OF 4 PLOTS:	D. 13/52	44.19	15.11	89.9	6.68	128.21	D. 13/52	14.70	105
	*B. 41227	40.69	14.77	90.0	6.01	115.35	D. 26/52	13.62	
	D. 18/52	41.94	14.13	89.6	5.92	113.63	D. 30/52	12.91	
	D. 26/52	38.16	15.27	91.0	5.83	111.90	D. 35/52	12.81	
	D. 27/52	39.32	14.64	88.8	5.76	110.56	D. 6/52	12.69	
	D. 30/52	35.06	16.07	90.9	5.63	108.06	D. 14/52	12.65	
	D. 28/52	38.54	14.19	86.7	5.47	104.99	D. 28/52	12.64	
	D. 47/52	38.36	14.10	87.6	5.41	103.84	D. 22/52	12.56	
	D. 33/52	39.59	13.61	86.5	5.38	103.26	D. 47/52	12.50	
	D. 22/52	35.96	14.86	88.6	5.34	102.50	*B. 41227	12.49	
	D. 8/52	36.50	14.43	88.7	5.27	101.15	D. 27/52	12.43	
	D. 14/52	38.81	13.48	89.1	5.23	100.38	D. 8/52	12.36	
	D. 23/52	36.47	14.29	88.8	5.21	100.00	D. 48/52	12.34	
	D. 6/52	36.16	14.33	89.0	5.18	99.42	D. 18/52	11.85	
	D. 35/52	36.78	13.91	89.9	5.12	98.27	D. 2/52	11.76	
	D. 4/52	36.47	13.76	88.4	5.02	96.35	D. 42/52	11.41	
	D. 24/52	37.99	13.21	86.7	5.02	96.35	D. 12/52	11.34	
	D. 48/52	35.33	13.97	90.2	5.01	96.16	D. 4/52	11.27	
	D. 42/52	34.01	14.36	89.1	4.88	93.67	D. 21/52	11.25	
	D. 2/52	33.90	14.16	88 2	4.80	92.13	D. 33/52	11.05	
	D. 1/52	32.27	14.56	86.3	4.70	90.21	D. 24/52	10.83	
	D. 12/52	34.24	13.61	87.5	4.66	89.44	D. 23/52	10.63	
	D. 9/52	33.07	13.16	85.6	4.35	83.49	D. 1/52	10.51	
	D. 31/52	30.73	13.80	89.0	4.24	81.38	D. 31/52	10.18	
	D. 21/52	31.54	13.38	87.5	4.22	81.00	D. 9/52	10.17	
	Mean:				5.21	100.00			
	Significant Difference, 20 : 1:				.99	19.00			

*** Standard Cane.**

TABLE I.—(Contd.)—**Results of First Ratoon "Variety Sorting" Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane	Purity.	Sucrose in Cane per Acre.		Combined results for 2 Crops, Plants and 1st Ratoons.		Trial No.
					Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.	
	Sophia, Field 5 East "A" Reaped 28.8.56 at 12.75 months. Rainfall :—132.87 inches.								
	D. 44/52	42.97	16.06	91.3	6.90	132.44	D. 44/52	15.01	
	D. 55/52	41.36	14.49	88.7	6.00	115.16	D. 11/52	13.89	
	***B. 41227**	**40.93**	**14.59**	**91.2**	**5.97**	**114.59**	D. 40/52	13.71	
	D. 45/52	43.14	13.73	88.8	5.93	113.82	D. 19/52	12.77	
	D. 11/52	42.51	13.93	89.5	5.92	113.63	D. 49/52	12.61	
	D. 57/52	38.52	15.04	90.6	5.79	111.13	D. 34/52	12.39	
	D. 40/52	36.60	15.70	91.3	5.75	110.36	***B. 41227**	**12.17**	
	D. 54/52	43.12	13.34	87.6	5.75	110.36	D. 55/52	12.11	
	D. 19/52	46.11	12.33	88.6	5.69	109.21	D. 45/52	12.08	
	D. 34/52	44.27	12.67	83.3	5.61	107.68	D. 57/52	11.93	
	D. 56/52	38.05	14.50	88.5	5.51	105.76	D. 54/52	11.77	
	D. 49/52	43.47	12.29	87.6	5.34	102.50	D. 56/52	11.67	
MEANS OF 3	D. 39/52	38.94	13.19	86.1	5.13	98.46	D. 38/52	11.49	
	D. 15/52	42.35	11.97	87.8	5.07	97.31	D. 46/52	11.27	
PLOTS :	D. 17/52	34.37	14.40	91.3	4.95	95.01	D. 17/52	11.03	106
	D. 37/52	35.02	14.09	89.9	4.93	94.63	D. 39/52	10.94	
	D. 38/52	38.08	12.95	87.9	4.93	94.63	D. 43/52	10.50	
	D. 36/52	31.45	15.03	88.7	4.73	90.79	D. 37/52	10.56	
	D. 46/52	31.02	15.14	91.0	4.70	90.21	D. 25/52	10.27	
	D. 25/52	34.28	13.68	88.7	4.69	90.02	D. 36/52	10.11	
	D. 20/52	41.31	10.90	80.9	4.50	86.37	D. 15/52	10.09	
	D. 43/52	30.63	14.43	90.9	4.42	84.84	D. 20/52	10.09	
	D. 50/52	34.78	12.13	87.2	4.22	81.00	D. 52/52	8.82	
	D. 29/52	32.12	12.76	87.9	4.10	78.69	D. 29/52	8.65	
	D. 52/52	26.41	14.54	88.3	3.84	73.70	D. 50/52	8.41	
	Mean :				5.21	100.00			
	Significant Difference, 20 : 1.				1.11	21.31			

* **Standard Cane.**

TABLE I.—(Contd.) —Results of a Second Ratoon "Variety Sorting" Trial on Demerara Frontland Clay.

	Variety.	Cane per Acre, Tons.	Pol. % Cane	Purity.	Sucrose in Cane per Acre, Tons.	Sucrose in Cane per Acre, % Mean.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons. Variety.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
	Sophia, Field 4 West "A" Reaped 18.4.56 at 12.00 months. Rainfall :—107.42 inches.								
MEANS OF 4 PLOTS:	***B. 41227**	**40.92**	**15.75**	**90.1**	**6.44**	**135.01**	***B. 41227**	**21.67**	82
	B. 49257	40.29	14.03	85.7	5.65	118.45	B. 49354	19.92	
	B. 49354	34.79	16.05	89.4	5.58	116.98	B. 49257	19.71	
	B. 4942	35.61	15.55	88.6	5.54	116.14	B. 49353	19.62	
	B. 4966	38.61	14.22	87.0	5.49	115.09	B. 4942	19.27	
	B. 49380	37.54	14.47	87.8	5.43	113.84	B. 49122	18.45	
	B. 4956	40.11	13.45	88.1	5.39	113.00	B. 4956	18.18	
	B. 4906	34.17	15.41	90.9	5.26	110.27	B. 49380	17.91	
	B. 49353	33.01	15.90	91.1	5.25	110.06	B. 4995	17.87	
	B. 49197	36.00	14.08	87.9	5.07	106.29	B. 4966	17.75	
	B. 49122	36.05	13.96	90.1	5.03	105.45	B. 49197	17.36	
	B. 4995	33.85	14.48	89.8	4.90	102.73	B. 4906	16.87	
	B. 49309	31.60	14.64	88.1	4.62	97.06	B. 49377	16.59	
	B. 49301	28.47	16.21	91.4	4.62	96.86	B. 49186	16.27	
	B. 49355	31.94	14.48	86.2	4.62	96.86	B. 49355	15.93	
	B. 49186	29.09	15.32	90.0	4.45	93.29	B. 49309	15.90	
	B. 49229	25.33	16.91	91.7	4.28	89.73	B. 49376	15.68	
	B. 49376	27.48	15.51	89.5	4.26	89.31	B. 49301	15.27	
	B. 49377	29.16	13.69	86.1	3.99	83.65	B. 49229	14.65	
	B. 4905	28.84	13.46	86.1	3.88	81.34	B. 4905	14.25	
	B. 49388	28.79	12.61	83.8	3.63	76.10	B. 49388	13.42	
	B. 4968	22.28	**15.08**	86.4	3.36	70.44	B. 4968	13.31	
	B. 4945	21.39	13.92	87.0	2.97	62.26	B. 4945	12.26	
	Mean :				4.77	100.00			
	Significant Difference, 20 : 1 :				.85	17.82			

*** Standard Cane.**

TABLE I (Contd.)—Results of a Plant Cane "Variety Sorting" Trial on Pegassy Clay.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre.		Trial No.
					Tons.	% Mean.	
	Pln. Uitvlugt, Field 89 M.Z.E. Reaped 28.8.56 at 14.75 months. Rainfall :—164.24 inches.						
MEANS OF 4 PLOTS :	*B. 41227	60.34	14.65	92.8	8.84	126.47	135
	B. 5178	59.30	14.67	88.9	8.70	124.46	
	B. 51116	58.10	14.52	90.4	8.44	120.74	
	B. 51353	61.84	13.62	86.8	8.42	120.46	
	B. 49119	58.24	14.38	88.3	8.37	119.74	
	B. 51355	63.78	13.04	84.6	8.31	118.88	
	B. 51134	56.06	14.40	87.9	8.07	115.45	
	B. 51183	54.45	14.61	91.1	7.96	113.88	
	B. 51131	54.90	14.46	91.0	7.94	113.59	
	B. 5121	57.75	13.59	89.3	7.85	112.30	
	B. 51311	50.34	14.17	89.6	7.13	102.00	
	B. 51129	47.98	14.85	90.8	7.12	101.86	
	B. 51259	50.15	14.20	88.1	7.12	101.86	
	B. 5124	47.07	14.67	88.5	6.90	98.71	
	B. 51211	53.55	12.40	87.9	6.64	94.99	
	B. 51190	48.78	13.06	88.3	6.37	91.13	
	B. 51168	43.37	13.96	89.5	6.05	86.55	
	B. 51167	42.81	14.03	89.1	6.01	85.98	
	B. 51192	44.96	13.10	88.0	5.89	84.26	
	B. 51105	41.75	13.75	88.1	5.74	82.12	
	B. 51321	40.53	13.83	89.2	5.60	80.11	
	B. 5143	44.30	12.51	86.6	5.54	79.26	
	B. 5192	40.82	13.43	91.0	5.48	78.40	
	B. 49311	42.64	12.81	88.5	5.46	78.11	
	B. 51156	34.85	13.77	87.8	4.80	68.67	
	Mean:				6.99	100.00	
	Significant Difference, 20 : 1:				1.27	18.17	

* Standard Cane.

TABLE I (Contd.)—**Results of a First Ratoon "Variety Sorting" Trial on Pegassy Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre. Tons.	Sucrose in Cane per Acre. % Mean.	Combined results for 2 Crops, Plants and 1st Ratoons. Variety.	Combined results for 2 Crops, Plants and 1st Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
	Pln. De Kinderen, Field W. 78. Reaped 19.4.56 at 11.75 months. Rainfall :—120.77 inches.								
MEANS OF 4 PLOTS:	B. 49119	39.86	15.44	89.2	6.16	137.50	*B. 41227	12.26	107
	*B. 41227	36.31	15.77	89.3	5.72	127.68	B. 49119	10.55	
	B. 50267	36.44	14.68	89.0	5.35	119.42	B. 50267	10.28	
	B. 50126	29.63	16.14	90.9	4.78	106.70	B. 50166	9.59	
	B. 50135	34.97	13.35	84.7	4.67	104.24	B. 50268	9.43	
	B. 50352	33.91	13.51	87.1	4.58	102.23	B. 50126	9.34	
	B. 50166	29.03	15.58	91.1	4.52	100.89	B. 50135	9.03	
	B. 50345	26.82	16.53	91.8	4.43	98.88	B. 50352	8.93	
	B. 50155	30.90	14.05	87.9	4.34	96.87	B. 50115	8.84	
	B. 50311	31.16	13.92	88.4	4.34	96.87	B. 50311	8.79	
	B. 50347	31.35	13.86	87.2	4.34	96.87	B. 50155	8.46	
	B. 50115	33.78	12.57	84.2	4.24	94.64	B. 5037	8.37	
	B. 5098	28.27	14.87	88.5	4.20	93.75	B. 50345	8.30	
	B. 5047	27.73	15.03	87.7	4.17	93.08	B. 5047	8.20	
	B. 50268	30.45	13.63	86.7	4.15	92.63	B. 50347	8.12	
	B. 50377	28.40	14.58	88.7	4.14	92.41	B. 50210	8.05	
	B. 5037	26.79	15.14	89.5	4.06	90.62	B. 5098	7.32	
	B. 50210	29.94	13.52	84.1	4.05	90.40	B. 50370	7.31	
	B. 50141	28.50	13.64	84.6	3.88	86.61	B. 50377	7.11	
	B. 50370	24.36	14.24	88.7	3.47	77.46	B. 50141	6.86	
	Mean:				4.48	100.00			
	Significant Difference, 20:1:				.79	17.63			

Results of a Second Ratoon "Variety Sorting" Trial on Pegassy Clay.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre. Tons.	Sucrose in Cane per Acre. % Mean.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons. Variety.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
	Pln. Uitvlugt, Field 71 M.Z.E. Reaped 31.8.56 at 12.00 months. Rainfall :—130.22 inches.								
MEANS OF 4 PLOTS:	*B. 41227	35.87	14.29	88.1	5.13	132.56	*B. 41227	14.79	83
	B. 49380	32.63	13.64	86.8	4.45	114.99	B. 49354	14.32	
	B. 4956	35.40	12.50	88.7	4.42	114.21	B. 37161	13.98	
	B. 49354	28.60	15.19	89.1	4.34	112.14	B. 4942	13.32	
	B. 49353	27.25	14.58	90.3	3.97	102.58	B. 49380	13.08	
	B. 37161	27.69	14.26	91.1	3.95	102.07	B. 4956	12.73	
	B. 49122	26.65	14.77	87.6	3.93	101.55	B. 49377	12.66	
	B. 49309	29.22	13.42	87.5	3.92	101.29	B. 49122	12.41	
	B. 4995	28.37	13.48	89.7	3.82	98.71	B. 4995	12.18	
	B. 49377	25.54	14.79	87.2	3.78	97.67	B. 49353	12.01	
	B. 4966	27.70	13.22	87.2	3.66	94.57	B. 49309	11.41	
	B. 4906	25.56	13.11	84.7	3.35	86.56	B. 4966	10.84	
	B. 49197	26.03	12.81	86.5	3.33	86.05	B. 4906	10.67	
	B. 4942	22.39	13.99	88.9	3.13	80.88	B. 49186	10.33	
	B. 49186	22.33	13.10	88.2	2.92	75.45	B. 49197	10.20	
	Mean:				3.87	100.00			
	Significant Difference, 20:1:				.69	17.83			

*** Standard Cane.**

B. PLANT CANE VARIETY TRIALS.

Twenty (20) Variety Trials were reaped as Plants during 1956, the results of which are presented in Table II. These experiments are classified according to soil type and locality as follows:—

Soil Type and Locality.	Index Nos. of Trials.	No. of Trials.
Clays—Demerara.	136, 137, 138, 139, 140, 141, 142, 143, 144, 145.	10
Clays—Berbice.	146, 147, 154, 155.	4
Riverside Clay.	153.	1
Pegassy Clay.	148, 149, 150, 151, 152.	5

TABLE II.— **Results of Plant Cane Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre. Tons.	Sucrose in Cane per Acre. % Mean.	Trial No.
	Sophia, Field 13 West "C" Reaped 7.5.56 at 11.50 months. Rainfall :—104.75 inches.						
MEANS OF 5 PLOTS:	*B. 41227	57.86	15.43	89.1	8.93	130.36	136
	D.M. 53/53	47.09	14.93	85.3	7.03	102.63	
	D.M. 54/53	33.99	13.51	86.7	4.59	67.01	
	Mean:				6.85	100.00	
	Significant Difference, 20:1:				.78	11.39	
	Sophia, Field 16 West "C" Reaped 10.8.56 at 14.00 months. Rainfall :—144.61 inches.						
MEANS OF 5 PLOTS:	D. 259/46	53.48	12.61	87.6	6.74	105.48	137
	*B. 41227	56.43	11.95	88.6	6.74	105.48	
	D. 106/46	53.62	11.28	84.4	6.05	94.68	
	D. 133/46	51.49	11.70	82.5	6.02	94.21	
	Mean:				6.39	100.00	
	Significant Difference, 20:1:				—		
	Sophia, Field 8 West "B" Reaped 12.9.56 at 13.00 months. Rainfall :—136.95 inches.						
MEANS OF 4 PLOTS:	B. 5121	56.93	14.74	91.4	8.39	142.69	138
	B. 5098	48.29	14.90	92.6	7.19	122.28	
	*B. 41227	46.34	15.14	91.5	7.01	119.22	
	B. 51131	44.63	15.42	91.7	6.88	117.01	
	B. 51190	43.80	15.62	91.0	6.84	116.33	
	B. 51355	47.56	13.86	88.0	6.59	112.07	
	D. 94/45	46.80	14.07	91.6	6.58	111.90	
	B. 50155	48.16	13.46	88.8	6.48	110.20	
	B. 4764	36.44	16.19	90.9	5.90	100.34	
	D. 6/52	37.34	15.49	91.4	5.78	98.30	
	B. 51105	35.87	16.03	90.7	5.75	97.79	
	B. 46288	40.26	14.09	90.1	5.67	96.43	
	B. 4995	37.81	14.89	90.5	5.63	95.75	
	D. 127/45	38.15	14.23	90.8	5.46	92.86	
	M. 134/32	36.24	14.71	91.2	5.33	90.65	
	B. 47399	36.81	13.74	90.6	5.06	86.05	
	B. 51167	33.81	14.82	90.0	5.01	85.20	
	B. 51259	29.24	15.97	88.9	4.67	79.42	
	B. 5192	25.91	14.65	90.8	3.80	64.63	
	B. 51156	24.89	14.22	88.9	3.54	60.20	
	Mean:				5.88	100.00	
	Significant Difference, 20:1:				1.13	19.22	

*** Standard Cane.**

TABLE II.—(Contd.)—**Results of Plant Cane Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre. Tons.	Sucrose in Cane per Acre. % Mean.	Trial No.
	Sophia, Field 8 East "B" Reaped 21.11.56 at 13.50 months. Rainfall :—141.39 inches.						
MEANS OF 4 PLOTS:	***B. 41227**	**56.05**	**14.22**	**90.0**	**7.97**	**124.34**	139
	D. 30/52	50.29	14.52	90.7	7.30	113.88	
	D. 2/46	48.07	14.40	**90.0**	6.92	107.96	
	D. 35/52	47.42	14.21	90.2	6.74	105.15	
	D. 40/52	46.52	14.22	89.3	6.61	103.12	
	D. 11/52	45.26	14.61	89.1	6.61	103.12	
	D. 4/52	44.79	14.32	89.6	6.41	100.00	
	D. 47/52	42.81	14.84	89.8	6.35	99.06	
	D. 57/52	47.46	13.11	88.7	6.22	97.04	
	D. 36/52	43.39	13.72	87.9	5.95	92.82	
	D. 17/52	41.94	14.16	90.0	5.94	92.67	
	D. 49/52	43.98	13.38	87.6	5.88	91.73	
	D. 19/52	45.22	12.95	86.1	5.86	91.42	
	D. 34/52	42.21	13.53	87.8	5.71	89.08	
	D. 6/52	41.39	13.57	87.3	5.62	87.68	
	Mean:				6.41	100.00	
	Significant Difference, 20 : 1:				105	16.38	
	Sophia, Field 8 East "C" Reaped 22.11.56 at 13.50 months. Rainfall :—141.39 inches.						
MEANS OF 5 PLOTS:	D. 141/46	60.28	13.12	85.2	7.91	126.56	140
	***B. 41227**	**58.21**	**12.84**	**82.2**	**7.47**	**119.52**	
	D. 159/45	50.54	12.13	85.4	6.13	98.08	
	D. 62/45	51.34	11.06	78.6	5.68	90.88	
	D. 94/45	46.34	11.93	81.7	5.53	88.48	
	D. 127/45	48.75	9.64	74.4	4.70	75.20	
	Mean:				6.25	100.00	
	Significant Difference, 20 : 1:				.91	14.58	
	Sophia, Field 12 West "B" Reaped 14.12.56 at 11.25 months. Rainfall :—111.04 inches.						
MEANS OF 5 PLOTS:	***B. 41227**	**59.82**	**13.60**	**87.2**	**8.14**	**105.03**	141
	Pindar	58.29	13.89	88.2	8.10	104.52	
	B. 49119	64.41	11.86	83.5	7.64	98.58	
	B. 47258	58.17	12.24	86.3	7.12	91.87	
	Mean:				7.75	100.00	
	Significant Difference, 20 · 1:				.68	8.77	

*** Standard Cane.**

TABLE II.—(Contd.)—**Results of Plant Cane Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre.		Trial No.
					Tons.	% Mean.	
	Pln. Enmore, Field V.27. Reaped 31.10.56 at 12.50 months. Rainfall :—106.65 inches.						
MEANS OF 5 PLOTS :	*B. 41227	36.84	13.80	87.5	5.08	129.26	142
	D. 141/46	32.40	13.96	92.0	4.52	115.01	
	B. 45137	29.23	14.38	84.5	4.20	106.87	
	B. 43253	27.88	14.41	88.0	4.02	102.29	
	B. 4711	30.95	12.76	86.2	3.95	100.51	
	Pindar	28.47	13.80	87.5	3.93	100.00	
	D. 49/46	30.96	12.42	84.5	3.84	97.71	
	D. 4/43	29.69	12.63	84.8	3.75	95.42	
	P.O.J. 3016	23.46	13.26	88.1	3.11	79.13	
	P.O.J. 2967	22.27	13.04	86.1	2.93	74.55	
	Mean :				3.93	100.00	
	Significant Difference, 20 : 1 :				.69	17.56	
	Pln. L.B.I., Field 83 Montrose. Reaped 21.2.56 at 12.50 months. Rainfall :—91.13 inches.						
MEANS OF 5 PLOTS :	B. 4942	43.62	14.74	91.2	6.43	115.44	143
	*B. 41227	48.59	12.68	88.3	6.16	110.59	
	B. 45270	51.62	11.68	86.3	6.03	108.26	
	M. 213/40	50.32	11.78	84.6	5.93	106.46	
	D. 141/46	43.87	12.37	87.1	5.43	97.49	
	D. 49/46	44.98	11.54	84.0	5.19	93.18	
	B. 4214	40.59	12.51	89.5	5.08	91.20	
	B. 43413	38.31	11.21	83.4	4.30	77.20	
	Mean :				5.57	100.00	
	Significant Difference, 20 : 1 :				.70	12.57	
	Pln. Lusignan, Field G.H. 14 E. Reaped 6.9.56 at 14.75 months. Rainfall :—153.49 inches.						
MEANS OF 5 PLOTS :	B. 49119	55.25	12.64	87.0	6.98	112.58	144
	B. 50347	52.83	12.60	87.1	6.66	107.42	
	B. 50135	53.39	12.04	86.2	6.43	103.71	
	*B. 41227	53.97	11.78	85.3	6.36	102.58	
	B. 49353	49.77	12.63	89.1	6.29	101.45	
	B. 4214	53.34	11.38	85.7	6.07	97.90	
	B. 5098	49.52	11.28	84.6	5.59	90.16	
	P.O.J. 2967	44.97	11.57	86.2	5.20	83.87	
	Mean :				6.20	100.00	
	Significant Difference, 20 : 1 :				—	—	

* **Standard Cane.**

TABLE II.—(Contd.)—**Results of Plant Cane Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre.		Trial No.
					Tons.	% Mean.	
	Pln. Ogle, Field 41 O. Reaped 14.8.56 at 13.75 months. Rainfall :—130.75 inches.						
MEANS OF 5 PLOTS:	*B.41227	45.85	11.69	84.8	5.36	120.72	145
	B. 51129	34.79	13.62	87.5	4.74	106.76	
	B. 49257	49.51	9.33	82.8	4.62	104.05	
	D. 259/46	39.84	11.43	86.3	4.55	102.48	
	B. 5124	36.93	11.94	84.8	4.41	99.32	
	B. 5098	38.28	10.96	82.9	4.20	94.59	
	B. 4995	37.18	11.25	86.1	4.18	94.14	
	Pindar	36.03	9.68	78.6	3.49	78.60	
	Mean:				4.44	100.00	
	Significant Difference, 20 : 1 :				.84	18.92	
	Results of Plant Cane Variety Trials on Berbice Frontland Clay.						
	Pln. Albion, Field 69 W. S½. Reaped 11.5.56 at 11.25 months. Rainfall :—103.40 inches.						
MEANS OF 5 PLOTS:	B. 49119	34.40	14.53	89 0	5.00	128.87	146
	***B. 41227**	**35.08**	**14.13**	**89.4**	**4.96**	**127.83**	
	B. 4942	27.16	14.79	89.0	4.02	103.61	
	B. 4995	26.50	14.50	90.4	3.84	98.97	
	B. 49354	23.83	15.67	90.3	3.73	96.13	
	B. 49353	24.20	14.58	89.6	3.53	90.98	
	B. 49257	25.30	12.89	87.0	3.26	84.02	
	B. 4956	23.24	11.74	85.1	2.73	70.36	
	Mean:				3.88	100.00	
	Significant Difference, 20:1:				.61	15.72	
	Pln. Albion, Field N. 63 "A". Reaped 21.12.56 at 13.75 months. Rainfall :—133.48 inches.						
MEANS OF 5 PLOTS:	B. 50112	51.83	15.03	89.8	7.79	115.24	147
	B. 49119	47.59	15.48	89.7	7.37	109.02	
	B. 5037	45.52	15.09	89.4	6.87	101.63	
	B. 5028	46.15	14.89	90.9	6.87	101.63	
	B. 5011	45.75	14.24	88.2	6.52	96.45	
	Pindar	43.46	14.49	90.1	6.30	93.20	
	D. 184/46	41.33	15.07	87.8	6.23	92.16	
	***B. 41227**	**41.30**	**14.94**	**90.4**	**6.17**	**91.27**	
	Mean:				6.76	100.00	
	Significant Difference, 20 : 1 :				—	—	

* **Standard Cane.**

TABLE II. (Contd.)—**Results of Plant Cane Variety Trials on Berbice Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre.		Trial No.
					Tons.	% Mean.	
	†*Pln. Port Mourant, Field A.E.W. 43. Reaped 21.12.56 at 13.25 months. Rainfall:—118.28 inches.*						
MEANS OF 5 PLOTS:	B. 47225	61.60	9.11	76.4	5.63	109.96	154
	B. 47258	59.30	9.13	78.6	5.39	105.27	
	B. 37161	56.20	9.49	76.6	5.32	103.91	
	***B. 41227**	58.30	8.74	74.1	5.09	99.41	
	B. 47379	58.40	8.36	74.4	4.88	95.31	
	Pindar	48.50	9.12	77.3	4.41	86.13	
	Mean:				5.12	100.00	
	Significant Difference, 20:1:				.69	13.48	
	†*Pln. Skeldon, Field 133 B. Section 80. Reaped 14.12.56 at 11.25 months. Rainfall:—73.51 inches.*						
MEANS OF 5 PLOTS:	***B. 41227**	54.45	10.72	81.5	5.84	113.62	155
	B. 47258	50.78	10.48	80.6	5.32	103.50	
	B. 37161	51.08	10.32	81.1	5.27	102.53	
	Trojan	38.45	13.44	87.1	5.17	100.58	
	Eros	41.58	12.24	85.6	5.09	99.03	
	B. 47225	46.33	10.88	82.7	5.04	98.05	
	Pindar	42.10	11.44	83.8	4.82	93.77	
	H. 37-1933	46.13	9.84	79.0	4.54	88.33	
	Mean:				5.14	100.00	
	Significant Difference, 20:1:				.47	9.14	
	Results of a Plant Cane Variety Trial on Riverside Clay.						
	Pln. Versailles, Field G.F. "I." Reaped 26.9.56 at 14.75 months, Rainfall:—154.51 inches.						
MEANS OF 5 PLOTS:	***B. 41227**	56.90	13.24	88.3	7.54	120.26	153
	B. 4995	50.08	13.45	89.7	6.73	107.34	
	B. 49354	48.67	13.44	87.2	6.54	104.30	
	B. 50155	51.36	12.37	84.4	6.35	101.28	
	B. 49353	46.34	13.60	89.7	6.30	100.48	
	P.O.J. 3016	45.07	13.21	89.6	5.95	94.90	
	Pindar	53.30	10.74	80.6	5.72	91.23	
	B. 50267	52.78	9.59	77.9	5.06	80.70	
	Mean:				6.27	100.00	
	Significant Difference, 20:1:				1.10	17.54	

*** Standard Cane.**

† These Experiments were laid down and reaped by Mr. R. B. Austin of Bookers Sugar Estates, Ltd.

TABLE II. (Contd.)—**Results of Plant Cane Variety Trials on Pegassy Clay.**

	Variety.	Cane per Acre. Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre. Tons.	Sucrose in Cane per Acre. % Mean.	Trial No.
	Pln. Blairmont, Field 15 H.P. Reaped 29.8.56 at 14.25 months. Rainfall:—108.26 inches.						
MEANS OF 5 PLOTS:	Pindar	46.83	14.90	89.7	6.98	120.14	148
	*B. 41227	48.95	13.45	89.4	6.58	113.25	
	B. 4711	44.90	13.21	86.7	5.93	102.07	
	B. 49354	39.11	14.37	89.5	5.62	96.73	
	B. 43253	39.11	14.26	89.4	5.58	96.04	
	M. 134/32	40.14	13.20	87.9	5.30	91.22	
	B. 4995	37.63	14.05	91.2	5.29	91.05	
	B. 49353	37.06	14.07	90.4	5.21	89.67	
	Mean:				5.81	100.00	
	Significant Difference, 20:1:				.96	16.52	
	Pln. Diamond, Field G.G. 21 E. Reaped 1.3.56 at 13.00 months. Rainfall:—117.79 inches.						
MEANS OF 5 PLOTS:	B. 4214	57.32	14.28	90.8	8.18	119.77	149
	Pindar	55.63	14.34	88.3	7.98	116.84	
	*B. 41227	56.87	12.54	85.1	7.13	104.39	
	B. 37161	50.05	13.93	89.5	6.97	102.05	
	B. 4942	45.45	14.91	89.3	6.78	99.27	
	B. 49354	51.10	12.78	82.8	6.53	95.61	
	M. 213/40	55.94	11.51	80.4	6.44	94.29	
	B. 43413	52.15	11.23	79.9	5.86	85.80	
	B. 45137	51.06	11.05	80.3	5.64	82.58	
	Mean:				6.83	100.00	
	Significant Difference, 20:1:				1.04	15.23	
	Pln. Diamond, Field 115. Reaped 5.9.56 at 15.25 months. Rainfall:—154.47 inches.						
MEANS OF 5 PLOTS:	*B. 41227	57.09	14.25	90.0	8.14	127.39	150
	Pindar	51.42	14.27	90.3	7.05	114.87	
	B. 47258	50.71	13.91	89.2	7.34	110.33	
	B. 45137	49.42	13.20	86.4	6.52	102.03	
	B. 37161	45.70	13.75	86.8	6.28	98.23	
	B. 47399	46.84	12.61	84.4	5.91	92.49	
	D. 4/43	46.27	12.22	85.1	5.65	88.42	
	B. 45270	43.05	12.67	87.8	5.45	85.29	
	P.O.J. 3016	37.31	13.95	90.8	5.20	81.38	
	Mean:				6.39	100.00	
	Significant Difference, 20:1:				1.18	18.47	

* **Standard Cane.**

TABLE II. (Contd.)—Results of Plant Cane Variety Trials on Pegassy Clay.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre. Tons.	Sucrose in Cane per Acre. % Mean.	Trial No.
Pln. Leonora, Field Edin. 66. Reaped 24.4.56 at 14.25 months. Rainfall:—137.96 inches.							
MEANS OF 5 PLOTS:	*B. 41227	46.62	14.75	88.9	6.88	129.08	151
	D. 141/46	48.12	13.26	86.1	6.38	119.70	
	B. 4214	41.67	14.24	90.9	5.93	111.26	
	B. 43413	41.52	12.86	83.0	5.35	100.28	
	D. 259/46	34.69	14.11	90.1	4.90	91.93	
	B. 4942	32.59	14.95	90.3	4.89	91.74	
	D. 49/46	39.50	12.18	79.3	4.81	90.24	
	B. 46351	34.31	13.63	83.5	4.68	87.80	
	B. 43214	30.14	13.85	86.9	4.18	78.42	
	Mean:				5.33	100.00	
	Significant Difference, 20:1:				1.01	18.95	
Pln. Wales, Field Y.R. 36 E. Reaped 11.9.56 at 12.25 months. Rainfall:—143.52 inches.							
MEANS OF 5 PLOTS:	D. 141/46	46.99	12.06	83.7	5.67	122.20	152
	*B. 41227	41.39	12.86	86.6	5.32	114.66	
	Pindar	35.84	14.62	90.6	5.24	112.93	
	B. 4711	42.04	12.33	85.0	5.18	111.64	
	B. 47379	35.92	11.49	84.3	4.13	89.01	
	B. 45270	34.00	12.07	86.0	4.11	88.58	
	D. 49/46	36.30	11.01	80.0	4.00	86.21	
	P.O.J. 3016	27.54	12.71	88.7	3.50	75.43	
	Mean:				4.64	100.00	
	Significant Difference, 20:1:				.78	16.81	

* Standard Cane.

C. FIRST RATOON VARIETY TRIALS.

Twenty-three (23) Variety Trials were reaped as First Ratoon during 1956, the results of which are presented in Table III. One of these experiments was badly damaged by rats and as the results are therefore unreliable the data for this experiment are not included herein.

The classification of the First Ratoon Variety Trials according to soil type and locality is as follows:—

Soil Type and Locality.	Index Nos. of Trials.	No. of Trials.
Clays—Demerara.	108, 109. 110, 111, 112, 113, 114, 115, 116, 117, 119, 120.	12
Clays—Berbice.	121, 122, 123, 124.	4
Riverside Clay.	131.	1
Pegassy Clay.	125, 126*, 127, 128, 129, 130.	6

* Badly damaged by rats and the results have in consequence been omitted.

TABLE III.—**Results of First Ratoon Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre. Tons.	Sucrose in Cane per Acre. % Mean.	Combined results for 2 Crops, Plants and 1st Ratoons. Variety.	Combined results for 2 Crops, Plants and 1st Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
	Sophia, Field 13 East "A." Reaped 4.4.56 at 11.75 months. Rainfall:—106.24 inches.								
MEANS OF 5 PLOTS:	***B. 41227**	**49.50**	**15.89**	**90.5**	**7.87**	**129.65**	***B. 41227**	**14.20**	108
	B. 5098	47.29	15.38	89.6	7.27	119.77	B. 5098	13.30	
	B. 49198	43.26	14.33	85.1	6.20	102.14	B. 50275	12.30	
	B. 50184	37.19	15.79	89.4	5.87	96.71	B. 4956	11.77	
	B. 50275	39.58	14.78	90.5	5.85	96.38	B. 49198	11.63	
	B. 4956	45.01	12.91	87.3	5.81	95.72	B. 5028	11.49	
	B. 5028	39.83	14.31	89.0	5.70	93.90	B. 50184	11.17	
	B. 4905	34.20	16.47	89.7	5.63	92.75	B. 5041	11.12	
	B. 49346	39.70	13.39	87.5	5.32	87.64	B. 4905	10.61	
	B. 5041	35.35	14.78	83.3	5.23	86.16	B. 49346	9.58	
	Mean:				6.07	100.00			
	Significant Difference, 20 : 1 :				.69	11.37			
	Sophia, Field 5 West "B." Reaped 20.9.56 at 12.50 months. Rainfall:—138.65 inches.								
MEANS OF 5 PLOTS:	D. 141/46	55.22	15.22	90.6	8.40	140.94	D. 141/46	16.67	109
	D. 49/46	56.66	14.05	89.5	7.96	133.56	D. 49/46	15.39	
	***B. 41227**	**44.00**	**14.50**	**91.4**	**6.38**	**107.05**	***B. 41227**	**13.67**	
	D. 56/45	40.40	15.55	92.7	6.28	105.37	D. 56/45	13.09	
	D. 62/45	39.97	14.68	91.4	5.87	98.49	D. 62/45	12.65	
	D. 94/45	39.80	14.25	92.1	5.67	95.13	D. 94/45	12.63	
	B. 49197	38.47	14.39	91.6	5.54	92.95	D. 27/45	12.24	
	D. 27/45	40.17	13.68	89.7	5.50	92.28	B. 43253	11.65	
	B. 43253	33.24	15.41	91.5	5.12	85.91	B. 46218	10.80	
	B. 46218	30.58	15.91	91.4	4.86	81.54	B. 49197	10.65	
	D. 275/46	30.36	13.05	89.0	3.96	64.42	D. 275/46	9.33	
	Mean:				5.96	100.00			
	Significant Difference, 20 : 1 :				1.14	19.13			
	Sophia, Field 5 West "A." Reaped 25.9.56 at 12.50 months. Rainfall:—137.71 inches.								
MEANS OF 5 PLOTS:	B. 4362	40.89	16.18	91.7	6.62	116.34	***B. 41227**	**14.39**	110
	***B. 41227**	**43.51**	**15.14**	**91.2**	**6.59**	**115.82**	B. 4362	**13.99**	
	B. 4373	42.13	14.64	87.8	6.17	108.44	B. 45137	13.83	
	B. 45137	44.39	13.80	89.8	6.13	107.73	B. 43214	13.07	
	B. 46351	41.85	14.51	88.8	6.07	106.68	B. 46136	12.14	
	B. 45270	45.19	13.26	90.2	5.99	105.27	B. 4373	11.84	
	B. 46340	39.04	14.94	91.4	5.83	102.46	B. 46340	11.69	
	B. 43214	38.89	14.50	90.2	5.64	99.12	B. 45270	11.62	
	B. 46136	36.39	15.32	90.7	5.58	98.07	B. 46351	11.48	
	P.O.J. 3016	27.39	14.87	92.5	4.07	71.53	P.O.J. 3016	9.12	
	P.O.J. 2967	25.79	15.18	92.0	3.91	68.72	P.O.J. 2967	8.39	
	Mean:				5.69	100.00			
	Significant Difference, 20 : 1 :				.89	15.64			

* **Standard Cane.**

TABLE III. (Contd.)—**Results of First Ratoon Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane	Purity.	Sucrose in Cane per Acre. Tons.	Sucrose in Cane per Acre. % Mean.	Combined results for 2 Crops, Plants and 1st Ratoons. Variety.	Combined results for 2 Crops, Plants and 1st Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
	Sophia, Field 10 West "B." Reaped 24.10.56 at 12.25 months. Rainfall:—138.90 inches.								
MEANS OF 5 PLOTS:	D. 49/46	57.17	13.57	88.3	7.76	123.57	*B. 41227	14.97	111
	D. 56/45	43.97	15.40	90.9	6.77	107.80	D. 49/46	14.52	
	D. 94/45	46.97	14.31	90.4	6.72	107.01	D. 94/45	13.65	
	D. 4/43	48.97	13.55	89.2	6.64	105.73	B. 4711	13.21	
	B. 4711	53.01	12.18	84.9	6.46	102.87	D. 56/45	13.15	
	*B. 41227	48.46	13.28	87.9	6.44	102.55	B. 47399	12.43	
	B. 47399	46.92	12.78	88.0	6.00	95.54	D. 4/43	12.30	
	P.O.J. 3016	37.07	13.95	89.4	5.17	82.32	P.O.J. 3016	10.77	
	P.O.J. 2967	30.51	14.29	91.2	4.36	69.43	P.O.J. 2967	8.95	
	Mean:				6.28	100.00			
	Significant Difference, 20 : 1 :				.90	14.33			
	Sophia, Field 10 West "A." Reaped 26.10.56 at 12.25 months. Rainfall:—139.84 inches.								
MEANS OF 5 PLOTS:	B. 50135	48.02	14.88	91.3	7.14	123.74	B. 50135	14.22	112
	B. 50268	44.55	13.85	89.9	6.17	106.93	B. 5037	13.59	
	*B. 41227	45.63	13.43	89.5	6.13	106.24	*B. 41227	13.14	
	B. 5037	42.98	13.79	90.0	5.93	102.77	B. 50267	12.54	
	B. 50267	45.03	13.13	89.1	5.91	102.43	B. 50210	12.17	
	B. 50311	41.21	14.32	91.8	5.90	102.25	B. 50268	12.07	
	B. 50210	40.16	12.55	86.5	5.04	87.35	B. 50311	11.52	
	B. 5047	35.76	13.98	89.7	5.00	86.66	B. 50370	10.85	
	B. 50370	34.98	13.35	89.4	4.67	80.94	B. 5047	10.41	
	Mean:				5.77	100.00			
	Significant Difference, 20 : 1 :				.90	15.60			
	Sophia, Field 10 East "A." Reaped 5.11.56 at 11.75 months. Rainfall:—132.09 inches.								
MEANS OF 5 PLOTS.	D. 141/46	41.91	16.01	90.3	6.71	129.04	D. 141/46	13.61	113
	D. 49/46	40.16	15.71	88.1	6.31	121.35	*B. 41227	12.93	
	*B. 41227	39.27	15.05	89.7	5.91	113.65	D. 49/46	12.68	
	B. 50135	35.96	15.24	88.6	5.48	105.38	B. 50135	12.37	
	D. 2/46	32.89	16.48	90.0	5.42	104.23	B. 43214	11.33	
	B. 43214	36.56	14.79	86.9	5.41	104.04	D. 13/52	11.31	
	D. 13/52	33.14	15.54	88.4	5.15	99.04	D. 94/45	11.24	
	B. 50377	32.71	15.32	87.3	5.01	96.35	D. 2/46	11.22	
	D. 94/45	32.40	15.43	91.0	5.00	96.15	B. 50377	11.19	
	D. 27/45	32.91	15.12	87.7	4.98	95.77	D. 27/45	10.81	
	D. 14/52	32.69	14.87	87.5	4.86	93.46	D. 14/52	10.73	
	D. 56/45	28.46	16.44	91.5	4.68	90.00	D. 56/45	10.31	
	D. 127/45	31.97	14.37	86.4	4.59	88.27	D. 127/45	10.31	
	P.O.J. 3016	20.48	16.42	91.3	3.36	64.62	P.O.J. 3016	8.67	
	Mean:				5.20	100.00			
	Significant Difference, 20 : 1 :				.71	13.65			

* **Standard Cane.**

TABLE III. (Contd.)—**Results of First Ratoon Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre. Tons.	Sucrose in Cane per Acre. % Mean.	Combined results for 2 Crops, Plants and 1st Ratoons. Variety.	Combined results for 2 Crops, Plants and 1st Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
Sophia, Field 16 East "B." Reaped 30.11.56 at 12.00 months. Rainfall:—128.94 inches.									
MEANS OF 5 PLOTS:	***B. 41227**	**38.60**	**15.21**	**90.4**	**5.87**	**129.30**	***B. 41227**	**12.19**	114
	B. 50275	35.95	14.89	90.7	5.36	118.06	B. 50275	11.12	
	B. 50268	36.80	14.50	90.6	5.33	117.40	D. 26/52	10.88	
	B. 50155	34.14	14.29	88.9	4.88	107.49	B. 50155	10.54	
	D. 26/52	31.93	15.04	90.1	4.80	105.73	B. 50268	10.29	
	Pindar	29.39	15.02	90.4	4.41	97.14	Pindar	10.22	
	B. 50352	32.67	13.43	88.4	4.39	96.70	P.O.J. 3016	9.37	
	D. 2/46	26.56	16.08	92.4	4.27	94.05	B. 50377	9.26	
	D. 94/45	27.45	15.20	91.5	4.17	91.85	D. 14/52	9.05	
	D. 62/45	26.75	15.55	91.1	4.16	91.63	D. 10/52	9.05	
	P.O.J. 3016	25.21	16.44	94.1	4.15	91.41	B. 50352	8.96	
	D. 14/52	28.20	14.52	88.9	4.09	90.09	D. 62/45	8.57	
	B. 50377	27.00	14.94	89.6	4.03	88.77	D. 2/46	8.15	
	D. 10/52	26.43	14.06	87.4	3.71	81.72	D. 94/45	7.92	
	Mean:				4.54	100.00			
	Significant Difference, 20:1:				1.08	23.79			
Sophia, Field 16 East "A." Reaped 6.12.56 at 12.25 months. Rainfall:—130.98 inches.									
MEANS OF 5 PLOTS:	D. 141/46	32.08	16.15	90.6	5.18	123.04	B. 50267	11.41	115
	B. 50267	34.96	14.72	87.9	5.15	122.33	***B. 41227**	**11.16**	
	***B. 41227**	**31.98**	**15.68**	**90.6**	**5.02**	**119.24**	D. 141/46	11.16	
	B. 47162	32.82	15.21	90.1	4.99	118.53	D. 8/52	10.91	
	B. 48372	32.59	14.89	89.2	4.85	115.20	B. 48372	10.57	
	D. 8/52	28.57	15.46	89.5	4.42	104.99	B. 47162	10.45	
	D. 2/52	26.38	16.08	91.2	4.24	100.71	D. 18/52	10.37	
	B. 43214	27.79	15.15	89.3	4.21	100.00	D. 2/52	9.66	
	D. 18/52	27.38	15.32	89.2	4.20	99.76	B. 43214	9.18	
	D. 12/52	26.44	15.04	89.7	3.98	94.54	D. 12/52	9.05	
	D. 22/52	23.94	16.16	91.1	3.87	91.92	D. 3/52	8.69	
	D. 3/52	25.14	14.64	88.2	3.68	87.41	D. 22/52	8.67	
	D. 53/52	23.40	14.04	89.4	3.28	77.91	D. 53/52	7.39	
	D. 1/52	13.33	14.05	86.6	1.87	44.42	D. 1/52	5.53	
	Mean:				4.21	100.00			
	Significant Difference, 20:1:				.80	19.00			
Pln. Leonora, Field Edinburgh I. Reaped 25.4.56 at 12.75 months. Rainfall:—134.62 inches.									
MEANS OF 5 PLOTS:	D. 49/46	54.15	14.97	84.6	8.11	126.32	D. 49/46	15.10	116
	B. 4362	47.34	16.21	87.5	7.67	119.47	***B. 41227**	**14.64**	
	***B. 41227**	**50.92**	**13.69**	**85.1**	**6.97**	**108.57**	B. 4362	14.36	
	B. 4744	49.23	13.49	84.5	6.64	103.43	B. 4744	13.38	
	B. 43214	41.74	15.45	85.3	6.45	100.47	B. 43214	12.29	
	M. 213/40	47.98	13.04	82.0	6.26	97.51	M. 213/40	12.12	
	D. 37/45	39.25	13.94	83.6	5.47	85.20	D. 37/45	10.67	
	M. 134/32	34.01	11.24	78.8	3.82	59.50	M. 134/32	7.97	
	Mean:				6.42	100.00			
	Significant Difference, 20:1:				.96	14.95			

*** Standard Cane.**

TABLE III. (Contd.)—Results of First Ratoon Variety Trials on Demerara Frontland Clay.

	Variety.	Cane. per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre. Tons.	Sucrose in Cane per Acre. % Mean.	Combined results for 2 Crops, Plants and 1st Ratoons. Variety.	Combined results for 2 Crops, Plants and 1st Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
	Pln. L.B.I., Field 4 Felicity. Reaped 4.4.56 at 12.25 months. Rainfall:—84.64 inches.								
MEANS OF 5 PLOTS.	B. 47225	46.43	14.59	86.8	6.77	106.95	B. 4362	12.24	117
	D. 27/45	48.47	13.85	83.0	6.71	106.00	B. 4744	11.91	
	B. 4362	45.20	14.71	84.2	6.65	105.06	D. 27/45	11.61	
	B. 4744	47.55	13.66	84.9	6.49	102.53	B. 47225	11.48	
	D. 37/45	46.98	13.76	84.1	6.47	102.21	*B. 41227	11.45	
	M. 213/40	50.86	12.03	79.2	6.10	96.37	D. 37/45	10.84	
	*B. 41227	46.22	12.81	83.2	5.92	93.52	M. 213/40	10.48	
	B. 43214	44.55	12.41	80.1	5.53	87.36	B. 43214	10.41	
	Mean:				6.33	100.00			
	Significant Difference, 20 : 1 :				—	—			
	Pln. Ogle, Field C.L. 36. Reaped 10.8.56 at 11.75 months. Rainfall:—112.38 inches.								
MEANS OF 5 PLOTS:	B. 49257	58.71	11.40	86.2	6.70	117.13	*B. 41227	12.79	119
	*B. 41227	45.33	14.04	90.9	6.36	111.19	B. 49257	12.66	
	B. 49376	44.54	13.18	88.5	5.87	102.62	B. 49197	12.54	
	B. 4942	46.54	12.42	87.3	5.78	101.05	B. 4942	12.09	
	B. 49197	41.75	13.45	88.2	5.61	98.08	B. 49376	11.58	
	B. 49380	42.15	12.60	88.0	5.31	92.83	B. 4906	10.97	
	B. 4906	40.71	12.85	87.4	5.23	91.43	B. 49380	10.70	
	B. 49309	40.83	12.02	87.9	4.91	85.84	B. 49309	10.24	
	Mean:				5.72	100.00			
	Significant Difference, 20 : 1 :				.87	15.21			
	Pln. Peter's Hall, Field H.B. 3 East. Reaped 22.8.56 at 12.25 months. Rainfall:—120.99 inches.								
MEANS OF 4 PLOTS:	*B. 41227	45.51	13.52	87.8	6.15	131.41	*B. 41227	12.57	120
	B. 43218	42.25	13.34	85.5	5.64	120.51	B. 43218	12.20	
	B. 45137	41.37	12.51	85.1	5.17	110.47	B. 45137	11.16	
	B. 4362	32.01	14.33	85.9	4.59	98.08	B. 47225	11.05	
	D. 24/46	37.04	12.08	83.4	4.47	95.51	B. 4362	10.58	
	B. 46230	35.19	12.00	82.3	4.23	90.38	B. 46230	10.26	
	B. 47225	29.33	13.95	88.9	4.09	87.39	D. 24/46	9.12	
	M. 423/41	27.30	11.44	82.5	3.12	66.67	M. 423/41	8.33	
	Mean:				4.68	100.00			
	Significant Difference, 20 : 1 :				.84	17.95			

*** Standard Cane.**

TABLE III. (Contd.)—Results of First Ratoon Variety Trials on Berbice Frontland Clay.

	Variety.	Cane per Acre, Tons.	Pol. % Cane	Purity.	Sucrose in Cane per Acre. Tons.	Sucrose in Cane per Acre. % Mean.	Combined results for 2 Crops, Plants, and 1st Ratoons. Variety.	Combined results for 2 Crops, Plants, and 1st Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
Pln. Albion, Field N. 24 A. Reaped 29.3.56 at 11.25 months. Rainfall:—111.44 inches.									
MEANS OF 5 PLOTS.	*B. 41227	32.55	14.29	85.4	4.65	126.36	*B. 41227	9.67	121
	B. 4995	26.66	14.74	89.3	3.93	106.79	B. 4995	9.11	
	B. 4966	27.26	13.98	85.2	3.81	103.53	B. 49354	8.46	
	B. 4906	24.65	14.99	86.8	3.69	100.27	B. 4906	7.71	
	B. 49354	24.93	14.24	90.2	3.55	96.47	B. 4966	7.58	
	B. 49122	26.14	13.22	86.2	3.46	94.02	B. 49122	7.44	
	B. 49377	23.65	13.79	82.1	3.26	88.59	B. 49309	6.80	
	B. 49309	25.30	12.24	83.2	3.10	84.24	B. 49377	6.62	
	Mean:				3.68	100.00			
	Significant Difference, 20:1:				.64	17.39			
Pln. Port Mourant, Field 38 A.E.E. Reaped 16.2.56 at 12.00 months. Rainfall:—113.98 inches.									
MEANS OF 5 PLOTS:	D. 49/46	43.73	14.77	89.9	5.46	142.92	*B. 41227	12.54	122
	*B. 41227	41.65	14.52	88.9	6.05	133.85	D. 49/46	12.45	
	B. 4744	42.00	13.98	88.1	5.88	130.09	B. 4744	12.23	
	D. 37/45	34.29	13.15	86.1	4.51	99.78	D. 37/45	9.51	
	B. 43253	27.37	15.23	89.2	4.17	92.26	B 43253	9.24	
	M. 213/40	23.22	13.61	87 1	3.16	69 91	M. 423/41	7.81	
	M. 423/41	23.88	12.96	86.3	3.09	68.36	M. 213/40	7.71	
	M. 134/32	22.68	12.44	84.6	2.82	62.39	M. 134/32	7.09	
	Mean:				4.52	100.00			
	Significant Difference, 20:1:				.72	15.93			
Pln. Port Mourant, Field T.L. 23. Reaped 18.9.56 at 12.75 months Rainfall:—112.91 inches.									
MEANS OF 5 PLOTS:	B. 4362	45.68	14.72	86.2	6.72	119.36	B. 4362	11.73	123
	B. 47258	42.84	14.44	88.5	6.18	109.77	B. 47258	11.31	
	*B. 41227	45.02	13.51	86.7	6.08	107.98	*B. 41227	11.12	
	D. 49/46	46.26	12.76	84.7	5.90	104.80	B. 45270	10.82	
	B. 45270	46.23	12.33	83.9	5.70	101.24	D. 49/46	10.47	
	B. 46351	41.94	12.65	85.9	5.30	94.14	B. 46351	9.70	
	B 46136	35.85	12.99	85.5	4.66	82.79	B. 46136	9.58	
	B. 43218	34.54	12.93	84.8	4.47	79.40	B. 43218	8.43	
	Mean:				5.63	100.00			
	Significant Difference. 20:1:				.72	12.79			

*** Standard Cane.**

TABLE III. (Contd.)—**Results of First Ratoon Variety Trials on Berbice Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre.		Combined results for 2 Crops, Plants, and 1st Ratoons.		Trial No.
					Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.	
	Pln. Rose Hall, Field 34 Lot 16. Reaped 28.3.56 at 10.50 months. Rainfall :—99.05 inches.								
MEANS OF 5 PLOTS :	B. 4942	38.49	15.65	87.2	6.02	129.46	B. 4942	11.31	124
	*B. 41227	38.79	13.76	84.6	5.34	114.84	*B. 41227	10.72	
	B. 4995	35.65	14.51	86.8	5.17	111.18	B. 4995	10.28	
	B. 49257	40.23	11.07	78.7	4.45	95.70	B. 49353	9.44	
	B. 49353	30.85	14.09	87.2	4.35	93.55	B. 49257	9.25	
	B. 49376	31.56	13.69	85.5	4.32	92.90	B. 49376	8.33	
	B. 49301	28.42	13.90	86.5	3.95	84.95	B. 49301	7.95	
	B. 4945	26.58	13.70	83.0	3.64	78.28	B. 4945	7.32	
	Mean :				4.65	100.00			
	Significant Difference, 20 : 1 :				.67	14.41			

Results of a First Ratoon Variety Trial on Riverside Clay.

Pln. Versailles, Field 1 V. Reaped 16.10.56 at 12.25 months. Rainfall :—138.81 inches.

MEANS OF 5 PLOTS :	B. 47258	42.67	15.48	90.2	6.60	128.65	B. 47258	14.13	131
	*B. 41227	40.81	14.65	89.7	5.98	116.57	B. 4373	13.18	
	B. 4373	38.18	15.23	88.0	5.82	113.45	*B. 41227	12.78	
	B. 43413	37.74	15.03	87.5	5.67	110.53	B. 43413	12.60	
	B. 47379	43.22	12.20	86.7	5.27	102.73	B. 47379	11.28	
	P.O.J. 3016	27.61	15.03	91.1	4.15	80.90	B. 46136	1023	
	B. 46136	32.73	12.36	88.1	4.05	78.95	P.O.J. 3016	9.87	
	P.O.J. 2967	25.49	13.88	89.6	3.54	69.01	P.O.J. 2967	7.55	
	Mean :				5.13	100.00			
	Significant Difference, 20:1:				.70	13.65			

Results of First Ratoon Variety Trials on Pegassy Clay.

Pln. Diamond, Field G.G. 45. Reaped 16.4.56 at 11.50 months. Rainfall :—98.51 inches.

MEANS OF 5 PLOTS :	*B. 41227	37.99	14.42	90.5	5.47	126.04	*B. 41227	10.68	125
	B. 4942	31.21	14.98	90.0	4.67	107.60	B. 49354	9.53	
	B. 49354	29.59	15.58	89.7	4.61	106.22	B. 4942	9.37	
	B. 4966	31.31	13.56	89.0	4.25	97.93	B. 4966	8.55	
	B. 49380	31.63	13.05	85.0	4.13	95.16	B. 49309	8.46	
	B. 49309	28.31	14.30	91.7	4.05	93.32	B. 49380	8.26	
	B. 4906	27.63	13.85	88.7	3.83	88.25	B. 49377	8.17	
	B. 49377	28.01	13.36	86.0	3.74	86.18	B. 4906	7.37	
	Mean :				4.34	100.00			
	Significant Difference, 20 : 1 :				.46	10.60			

* **Standard Cane.**

TABLE III. (Contd.)—**Results of First Ratoon Variety Trials on Pegassy Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre. Tons.	Sucrose in Cane per Acre. % Mean.	Combined results for 2 Crops, Plants and 1st Ratoons. Variety.	Combined results for 2 Crops, Plants and 1st Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
	Pln. Leonora, Field 65 L. Reaped 9.3.56 at 11.25 months. Rainfall :—125.92 inches.								
MEANS OF 5 PLOTS.	B. 47258	37.47	14.36	86.2	5.38	132.51	***B. 41227**	**10.04**	127
	***B. 41227**	**32.90**	**14.84**	**86.0**	**4.88**	**120.20**	B. 47258	9.97	
	B. 4362	28.40	15.73	87.1	4.47	110.10	B. 45137	9.53	
	B. 47225	28.62	14.63	87.1	4.19	103.20	B. 4362	9.19	
	B. 45137	34.24	12.05	82.3	4.13	101.72	B. 47225	9.06	
	D. 37/45	27.70	13.68	85.4	3.79	93.35	D. 37/45	7.44	
	B. 4373	20.24	13.96	82.5	2.83	69.70	B. 4744	7.17	
	B. 4744	21.66	12.96	85.1	2.81	69.21	B. 4373	4.91	
	Mean :				4.06	100.00			
	Significant Difference, 20 : 1 :				.61	15.02			
	Pln. Leonora, Field 47 G. Reaped 20.11.56 at 11.75 months. Rainfall :—141.72 inches.								
MEANS OF 5 PLOTS.	B. 47258	57.40	14.00	86.9	8.04	129.26	B. 47258	16.20	128
	***B. 41227**	**52.26**	**13.87**	**87.7**	**7.25**	**116.56**	***B. 41227**	**15.22**	
	B. 37161	46.32	14.12	89.8	6.54	105.14	B. 37161	13.86	
	B. 43253	42.53	15.29	87.3	6.50	104.50	B. 43253	13.40	
	B. 47379	47.34	13.16	85 3	6.23	100.16	B. 47379	12.87	
	P.O.J. 3016	39.90	15.00	90.5	5.99	96.30	P.O.J. 3016	12.82	
	B. 4373	39.68	13.20	83.3	5.24	84.24	B. 4373	9.38	
	P.O.J. 2967	31.00	12.77	84.7	3.96	63.67	P.O.J. 2967	9.30	
	Mean :				6.22	100.00			
	Significant Difference, 20 : 1 :				.55	8.84			
	Pln. Versailles, Field R.D.Z. 20. Reaped at 13.50 months. Rainfall:—129.85 inches.								
MEANS OF 5 PLOTS :	B. 4362	45.04	14.30	89.7	6.44	129.84	B. 4362	12.40	129
	***B. 41227**	**45.97**	**12.77**	**87.3**	**5.87**	**118.35**	***B. 41227**	**12.05**	
	B. 4744	35.27	14.70	89.9	5.18	104.44	B. 4744	10.47	
	B. 43253	33.80	14.85	88.3	5.02	101.21	B. 45137	10.07	
	B. 45137	39.20	12.23	85.5	4.79	96.57	B. 43253	9.17	
	D. 158/41	33.59	12.99	86.9	4.36	87.90	D. 37/45	8.44	
	D. 37/45	32.03	13.44	86.3	4.31	86.90	D. 158/41	8.21	
	D. 54/43	31.98	11.54	84.7	3.69	74.40	D. 54/43	6.90	
	Mean :				4.96	100.00			
	Significant Difference, 20 : 1 :				.93	18.75			

* **Standard Cane.**

TABLE III. (Contd.)—**Results of First Ratoon Variety Trials on Pegassy Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane	Purity.	Sucrose in Cane per Acre,		Combined results for 2 Crops. Plants and 1st Ratoons.		Trial No.
					Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.	
	Pln. Wales, Filed 53 V.B. Reaped 3.5.56 at 12.25 months. Rainfall:—127.20 inches.								
MEANS OF 5 PLOTS:	B. 47258	42.49	14.38	89.8	6.11	119.80	B. 47258	11.22	130
	***B. 41227**	**40.13**	**14.72**	**91.7**	**5.91**	**115.88**	***B. 41227**	**10.87**	
	B. 46351	38.48	14.37	88.0	5.53	108.43	B. 47225	10.38	
	B. 47225	39.06	12.75	90.7	4.98	97.65	B. 46351	10.25	
	B. 46378	37.12	13.04	85.1	4.84	94.90	B. 46378	10.05	
	B. 43253	30.47	15.60	90.5	4.75	93.14	B. 43253	9.95	
	M. 423/41	33.32	13.52	87.5	4.50	88.24	M. 423/41	8.24	
	B. 46136	29.85	13.91	90.3	4.15	81.37	B. 46136	8.05	
	Mean:				5.10	100.00			
	Significant Difference, 20:1:				.67	13.14			

***Standard Cane.**

D. SECOND RATOON VARIETY TRIALS.

Nineteen (19) Variety Trials were reaped as Second Ratoon during 1956, the results of which are presented in Table IV. These varieties are classified according to soil type and locality as follows:—

Soil Type and Locality.	Index Nos. of Trials.	No. of Trials.
Clays—Demerara.	84, 85, 86, 87, 88, 89, 90 91, 92, 93, 94, 95, 96, 97.	14
Clays—Berbice.	98, 99.	2
Riverside Clay.	100.	1
Pegassy Clay.	102, 103.	2

TABLE IV.—**Results of Second Ratoon Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane	Purity.	Sucrose in Cane per Acre. Tons.	Sucrose in Cane per Acre. % Mean.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons. Variety.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
Sophia, Field 3 West "B". Reaped 10.4.56 at 11.50 months. Rainfall:—105.90 inches.									
MEANS OF 4 PLOTS:	*B. 41227	41.21	15.06	89.5	6.21	120.35	*B. 41227	20.01	85
	D. 58/43	39.26	13.85	87.5	5.44	105.43	D. 58/43	17.91	
	D. 4/43	36.47	14.66	89.5	5.35	103.68	B. 47225	17.61	
	B. 47225	33.14	15.57	90.6	5.16	100.00	D. 4/43	17.06	
	B. 46230	32.68	14.45	87.4	4.72	91.47	B. 46230	16.39	
	B. 46218	27.61	14.72	87.3	4.07	78.88	B. 46218	15.23	
	Mean:				5.16	100.00			
	Significant Difference, 20 : 1:				.66	12.79			
Sophia, Field 4 West "B". Reaped 14.4.56 at 12.00 months. Rainfall:—107.35 inches.									
MEANS OF 5 PLOTS:	B. 45270	37.84	14.96	89.7	5.66	119.66	*B. 41227	20.31	84
	*B. 41227	38.75	14.09	87.6	5.46	115.43	B. 45270	19.26	
	D. 4/43	37.07	12.51	85.0	4.64	98.10	D. 54/43	18.05	
	D. 54/43	37.86	11.40	82.2	4.32	91.33	D. 4/43	16.93	
	D. 27/45	30.86	13.56	87.1	4.18	88.37	B. 44279	16.41	
	B. 44279	32.28	12.83	90.1	4.14	87.53	D. 27/45	16.31	
	Mean:				4.73	100.00			
	Significant Difference, 20 : 1:				.74	15.64			
Sophia, Field 2 West "B". Reaped 14.8.56 at 12.00 months. Rainfall:—131.52 inches.									
MEANS OF 4 PLOTS:	D. 2/46	41.01	15.48	91.2	6.35	113.60	D. 133/46	20.16	86
	D. 133/46	43.47	13.74	89.9	5.97	106.80	D. 2/46	19.67	
	*B. 41227	41.87	14.04	90.0	5.88	105.19	*B. 41227	19.49	
	D. 184/46	29.49	14.17	91.0	4.18	74.78	D. 184/46	17.26	
	Mean:				5.59	100.00			
	Significant Difference, 20 : 1:				1.22	21.82			
Sophia, Field 2 West "A". Reaped 16.8.56 at 12.50 months. Rainfall:—132.51 inches.									
MEANS OF 4 PLOTS.	D. 49/46	44.20	12.86	87.5	5.68	125.39	D. 49/46	19.81	87
	D. 259/46	38.31	12.97	89.0	4.97	109.71	D. 259/46	19.35	
	*B. 41227	37.44	13.20	88.3	4.94	109.05	*B. 41227	17.89	
	D. 275/46	31.04	13.76	90.7	4.39	96.91	D. 275/46	16.19	
	D. 250/46	29.56	13.30	87.6	3.93	86.75	D. 250/46	14.68	
	D. 183/46	23.54	13.85	90.6	3.26	71.96	D. 183/46	14.63	
	Mean:				4.53	100.00			
	Significant Difference, 20 : 1:				.51	11.26			

* **Standard Cane.**

TABLE IV. (Contd.)— **Results of Second Ratoon Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre. Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre. Tons.	Sucrose in Cane per Acre. % Mean.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons. Variety.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons. Sucrose in Cane per Acre. Tons.	Trial No.
	Sophia, Field 2 East "B". Reaped 31.8.56 at 12.25 months. Rainfall:—131.19 inches.								
MEANS OF 4 PLOTS:	D. 133/46	41.21	12.15	87.3	5.00	119.62	D. 133/46	20.02	88
	D. 124/45	42.97	11.29	85.0	4.85	116.02	D. 141/46	18.36	
	***B. 41227**	**37.37**	11.92	86.8	4.45	106.46	***B. 41227**	18.25	
	D. 106/46	38.91	11.22	86.1	4.36	104.31	D. 106/46	16.80	
	D. 141/46	39.83	10.53	85.2	4.20	100.48	D. 124/45	16.58	
	D. 91/46	31.80	11.97	87.9	3.81	91.15	D. 112/46	15.44	
	D. 112/46	35.14	10.03	82.6	3.53	84.45	D. 91/46	14.89	
	D. 94/46	31.90	10.29	84.3	3.28	78.47	D. 94/46	13.56	
	Mean:				4.18	100.00			
	Significant Difference, 20 : 1 :				.76	18.18			
	Sophia, Field 2 East "A". Reaped 1.9.56 at 12.25 months. Rainfall:—131.19 inches.								
MEANS OF 5 PLOTS:	D. 49/46	38.68	12.70	86.4	4.91	143.57	D. 49/46	19.19	89
	D. 175/46	33.95	12.30	85.3	4.17	121.93	***B. 41227**	**17.08**	
	***B. 41227**	**34.21**	11.86	83.7	4.06	118.71	D. 175/46	16.75	
	D. 184/46	25.38	12.95	87.1	3.29	96.20	D. 184/46	15.90	
	D. 92/46	26.06	12.56	85.6	3.27	95.61	D. 92/46	14.23	
	D. 275/46	23.45	11.82	84.3	2.77	80.99	D. 183/46	13.79	
	D. 98/46	22.35	11.90	83.0	2.66	77.78	D. 275/46	13.44	
	D. 183/46	17.22	13.18	89.6	2.27	66.37	D. 98/46	11.95	
	Mean:				3.42	100.00			
	Significant Difference, 20 : 1 :				.67	19.59			
	Sophia, Field 1 East "B". Reaped 7.9.56 at 12.25 months. Rainfall:—134.74 inches.								
MEANS OF 4 PLOTS:	***B. 41227**	**40.72**	**14.49**	**89.5**	**5.90**	126.07	***B. 41227**	**19.98**	90
	D. 177/45	36.06	14.65	90.1	5.28	112.82	D. 56/45	18.07	
	D. 35/45	35.51	14.74	90.8	5.24	111.97	D. 23/46	17.84	
	D. 83/45	32.69	15.16	90.6	4.95	105.77	D. 35/45	17.60	
	D. 56/45	32.62	14.79	90.7	4.82	102.99	D. 83/45	16.98	
	B. 44279	32.72	13.77	91.6	4.50	96.15	D. 177/45	16.93	
	D. 5/46	30.47	14.26	89.5	4.34	92.73	B. 44279	15.94	
	D. 23/46	30.58	13.73	88.3	4.20	89.74	B. 44150	15.70	
	D. 4/46	27.97	14.97	91.6	4.19	89.53	D. 4/46	15.61	
	B. 45274	31.37	13.03	87.8	4.09	87.39	B. 45274	15.53	
	B. 44150	28.81	13.83	89.1	3.98	85.04	D. 5/46	15.25	
	Mean:				4.68	100.00			
	Significant Difference, 20 : 1 :				.87	18.59			

*** Standard Cane.**

TABLE IV. (Contd.)—**Results of Second Ratoon Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre. Tons.	Sucrose in Cane per Acre. % Mean.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons. Variety.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
	Sophia, Field 1 East "A". Reaped 11.9.56 at 12.25 months. Rainfall:—134.88 inches.								
MEANS OF 4 PLOTS:	B. 46288	40.69	14.82	92.1	6.03	122.56	B. 46288	19.47	91
	B. 4556	43.48	13.39	87.9	5.82	118.29	B. 4556	19.08	
	B. 46384	36.27	14.88	90.5	5.40	109.76	B. 46103	17.99	
	B. 46103	44.95	12.68	89.4	5.38	109.35	*B. 41227	17.81	
	B. 46308	38.44	13.98	90.9	5.37	109.15	B. 46150	17.53	
	B. 46150	37.70	13.78	90.2	5.19	105.49	B. 46384	17.21	
	*B. 41227	37.89	13.40	89.3	5.08	103.25	B. 46308	17.12	
	B. 46230	31.61	13.52	87.7	4.27	86.79	B. 46116	15.83	
	B. 46116	33.05	12.58	87.0	4.16	84.55	D. 22/46	15.33	
	D. 22/46	26.64	14.69	90.0	3.91	79.47	B. 46230	15.10	
	D. 33/45	24.80	14.29	91.4	3.54	71.95	D. 33/45	12.80	
	Mean:				4.92	100.00			
	Significant Difference, 20:1:				1.21	24.59			
	Sophia, Field 15 West "B". Reaped 1.10.56 at 12.50 months. Rainfall:—138.54 inches.								
MEANS OF 3 PLOTS:	D. 49/46	33.61	14.03	90.4	4.73	125.13	D. 49/46	15.97	93
	B. 47379	32.25	13.70	90.7	4.42	116.93	B. 47162	15.91	
	D. 133/46	28.08	14.37	89.9	4.03	106.61	B. 47379	15.16	
	*B. 41227	29.43	13.60	90.5	4.00	105.82	*B. 41227	15.15	
	B. 47162	28.41	14.07	90.2	4.00	105.82	D. 133/46	13.81	
	D. 158/41	23.95	13.82	86.5	3.31	87.57	D. 158/41	13.74	
	D. 183/46	19.25	15.81	93.0	3.04	80.42	D. 275/46	11.65	
	D. 275/46	19.20	14.31	88.3	2.75	72.75	D. 183/46	11.56	
	Mean:				3.78	100.00			
	Significant Difference, 20:1:				—	—			
	Sophia, Field 15 West "A". Reaped 1.10.56 at 12.50 months. Rainfall:—138.54 inches.								
MEANS OF 3 PLOTS:	D. 37/45	38.85	12.93	87.1	5.02	122.15	B. 4362	17.90	92
	B. 4362	31.11	14.74	87.4	4.59	111.68	D. 37/46	17.52	
	B. 43413	30.05	15.19	88.1	4.56	110.95	D. 58/43	17.30	
	B. 45137	31.50	13.90	88.5	4.38	106.57	B. 43413	17.01	
	D. 58/43	32.14	13.24	87.8	4.26	103.65	B. 47258	16.95	
	*B. 41227	30.40	13.39	87.9	4.07	99.03	B. 4744	16.86	
	B. 4744	28.53	13.84	90.4	3.95	96.11	*B. 41227	16.27	
	B. 47258	28.62	13.69	90.9	3.92	95.38	B. 45137	15.65	
	D. 54/43	29.29	12.56	87.5	3.71	90.27	D. 27/45	15.58	
	B. 46290	26.32	13.05	87.0	3.43	83.45	D. 54/43	14.40	
	D. 27/45	24.85	13.51	89.6	3.36	81.75	B. 46290	13.25	
	Mean:				4.11	100.00			
	Significant Difference, 20:1:				.86	20.92			

*Standard Cane.

TABLE IV. —Results of Second Ratoon Variety Trials on Demerara Frontland Clay.

	Variety.	Cane per Acre, Tons.	Pol. % Cane.	Purity.	Sucrose in Cane per Acre.		Combined results for 3 Crops, Plants, 1st and 2nd Ratoons.		Trial No.
					Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.	
	Sophia, Field 12 East. Reaped 13.11.56 at 11.75 months. Rainfall:—124.46 inches.								
MEANS OF 5 PLOTS:	*B. 41227	46.35	15.45	89 9	7.16	144.35	*B. 41227	19.72	94
	D. 10/44	43.24	13.74	86.7	5.94	119.76	D. 10/44	17.18	
	B. 49354	33.63	16.25	89.6	5.64	113.71	B. 4966	15.95	
	B. 47225	34.43	15.61	91.0	5.37	108.27	B. 47225	15.64	
	B. 49355	33.69	15.59	89.1	5.25	105.85	B. 49354	15.63	
	B. 4966	37.64	13.85	87.5	5.21	105.04	B. 49380	15.51	
	B. 4942	33.26	15.28	90.1	5.08	102.42	B. 49355	15.46	
	B. 49377	33.49	14.76	85.1	4.95	99.80	B. 46351	15.24	
	B. 46351	33.60	14.53	88.1	4.88	98.39	B. 49122	15.06	
	B. 48372	34.40	13.65	84 7	4.69	94.56	B. 48372	15.03	
	B. 46136	29.70	14.70	88.9	4.37	88.10	B. 46136	14.72	
	B. 49380	32.01	13.54	85.7	4.33	87.30	B. 49377	14.67	
	B. 4945	26.93	15.73	89.3	4.24	85.48	B. 4942	14.31	
	B. 49122	31.37	13.11	88.1	4.11	82.86	B. 4945	12.67	
	B. 49388	23.85	13.57	86.2	3.23	65.12	B. 49388	10.86	
	Mean:				4.96	100.00			
	Significant Difference, 20 : 1 :				.86	17.34			
	Pln. Enmore, Field Paradise E. 4. Reaped 24.2.56 at 11.75 months. Rainfall:—83.83 inches.								
MEANS OF 5 PLOTS:	B. 46290	40.55	14.40	89.2	5.84	108.55	*B. 41227	16.42	95
	*B. 41227	42.81	13.39	87.0	5.73	106.51	D. 62/43	15.67	
	B. 4744	30.71	15.21	90.7	5.60	104.09	B. 46351	15.01	
	D. 62/43	38.53	13.21	86.0	5.35	99.44	B. 46378	15.00	
	B. 46378	38.13	13.73	86.3	5.24	97.40	B. 46290	14.74	
	B. 46351	37.00	14.11	87.1	5.22	97.03	B. 4744	14.11	
	B. 46340	33.13	14.21	88.8	4.71	87.55	B. 46340	13.79	
	Mean:				5.38	100.00			
	Significant Difference, 20 : 1 :				—	—			
	Pln. L.B.I., Field 82 Success. Reaped 7.3.56 at 10.75 months. Rainfall:—75.06 inches.								
MEANS OF 5 PLOTS:	*B. 41227	43.74	13.30	88.1	5.82	120.00	*B. 41227	17.55	96
	D. 58/43	43.00	12.14	82.3	5.22	107.63	B. 47225	16.69	
	B. 47225	38.18	13.46	87.9	5.14	105.98	B. 45270	16.07	
	B. 45270	42.40	11.96	85.7	5.07	104.54	D. 58/43	15.85	
	D. 37/45	38.38	12.38	85.5	4.75	97.94	D. 37/45	14.65	
	B. 45188	39.32	11.40	80.1	4.48	92.37	B. 45188	14.07	
	D. 54/43	37.16	11.61	83.7	4.31	88.87	D. 54/43	12.96	
	M. 423/41	34.87	11.55	80.8	4.03	83.09	M. 423/41	12.18	
	Mean:				4.85	100.00			
	Significant Difference, 20 : 1 :				.43	8.87			

*** Standard Cane.**

TABLE IV. (Contd.)—**Results of Second Ratoon Variety Trials on Demerara Frontland Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane	Purity.	Sucrose in Cane per Acre.		Combined results for 3 Crops, Plants, 1st and 2nd Ratoons.		Trial No.
					Tons.	% Mean.	Variety.	Sucrose in Cane per Acre, Tons.	
	Pln. Lusignan, Field 34 A. Reaped 27.9.56 at 11.50 months. Rainfall:—112.92 inches.								
MEANS OF 5 PLOTS:	D. 54/43	29.94	12.86	88.2	3.85	114.24	*B. 41227	13.98	97
	D. 58/43	28.03	12.90	87.9	3.62	107.42	D. 58/43	13.97	
	*B. 41227	27.17	13.14	89.2	3.57	105.93	B. 45270	13.71	
	B. 47419	25.42	13.87	90.3	3.53	104.75	D. 158/41	13.25	
	D. 158/41	27.11	13.03	87.4	3.53	104.75	D. 54/43	13.22	
	B. 45270	30.35	11.29	85.4	3.43	101.78	B. 46218	12.88	
	B. 46290	28.35	11.91	86.7	3.38	100.30	D. 4/43	12.68	
	B. 49388	24.47	12.65	87.4	3.09	91.69	B. 49388	10.72	
	B. 46218	21.14	13.63	88.1	2.88	85.46	B. 46290	10.31	
	D. 4/43	21.02	13.22	89.9	2.78	82.49	†B. 47419	8.07	
	Mean:				3.37	100.00			
	Significant Difference, 20 : 1 :				.66	19.58			
	Results of Second Ratoon Variety Trials on Berbice Frontland Clay.								
	Pln. Port Mourant, Field A.E.W. 29. Reaped 17.2.56 at 12.75 months. Rainfall:—118.04 inches.								
MEANS OF 5 PLOTS:	B. 4847	57.04	11.29	82.6	6.44	111.03	*B. 41227	17.30	98
	B. 48372	50.11	12.68	82.6	6.35	109.48	B. 48372	17.17	
	*B. 41227	48.05	12.75	83.9	6.13	105.69	B. 37161	15.96	
	B. 48375	45.88	12.81	83.8	5.88	101.38	‡B. 4847	10.77	
	B. 4895	43.88	13.23	83.8	5.81	100.17	‡B. 4895	9.99	
	B. 37161	44.01	12.39	83.8	5.45	93.97	‡B. 48384	9.67	
	B. 48384	42.43	12.62	82.8	5.35	92.24	‡B. 48375	9.64	
	B. 4893	42.92	11.68	83.6	5.01	86.38	‡B. 4893	9.36	
	Mean:				5.80	100.00			
	Significant Difference, 20 : 1 :				.90	15.52			
	Pln. Rose Hall, Field Tap 26. Reaped 21.12.56 at 12.75 months. Rainfall:—127.59 inches.								
MEANS OF 5 PLOTS:	B. 45137	27.79	12.91	86.3	3.59	143.03	*B. 41227	12.96	99
	*B. 41227	25.23	12.58	86.7	3.17	126.29	B. 45137	12.10	
	B. 47258	22.07	13.20	89.1	2.92	116.33	B. 47258	11.76	
	D. 37/45	23.80	11.79	85.3	2.81	111.95	D. 37/45	11.30	
	D. 158/41	21.74	10.64	82.9	2.31	92.03	B. 47225	9.57	
	B. 4362	16.76	13.22	86.7	2.22	88.45	D. 158/41	9.32	
	B. 47225	17.51	11.45	85.5	2.00	79.68	B. 4362	9.26	
	M. 423/41	11.42	9.54	79.3	1.09	43.43	M. 423/41	7.61	
	Mean:				2.51	100.00			
	Significant Difference, 20 : 1 :				.52	20.72			

* **Standard Cane.**

† **Not reaped as plants.**

‡ **Results for Plants and 2nd Ratoons.**

TABLE IV. (Contd.)—**Results of a Second Ratoon Variety Trial on Riverside Clay.**

	Variety.	Cane per Acre, Tons.	Pol. % Cane	Purity.	Sucrose in Cane per Acre. Tons.	Sucrose in Cane per Acre. % Mean.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons. Variety.	Combined results for 3 Crops, Plants, 1st and 2nd Ratoons. Sucrose in Cane per Acre, Tons.	Trial No.
	Pln. Blairmont, Field 8 Riverside. Reaped 13.3.56 at 11.00 months. Rainfall:—85.32 inches.								
MEANS OF 5 PLOTS:	*B. 41227	30.39	12.90	87.4	3.92	117.37	*B. 41227	14.68	100
	B. 47225	26.26	13.84	89.1	3.63	108.68	D. 4/43	14.06	
	D. 158/41	29.54	11.88	84.0	3.51	105.09	D. 54/43	13.31	
	D. 54/43	30.95	11.28	81.6	3.49	104.49	B. 47225	13.15	
	D. 4/43	27.20	11.85	83.3	3.23	96.71	D. 158/41	12.98	
	B. 49388	25.61	11.37	82.5	2.91	87.13	B. 46218	10.91	
	B. 46218	19.85	13.58	87.2	2.70	80.84	B. 49388	10.65	
	Mean:				3.34	100.00			
	Significant Difference, 20:1:				.38	11.38			

Results of Second Ratoon Variety Trials on Pegassy Clay.

	Pln. Diamond, Field 103/44 G.D. Reaped 2.8.56 at 12.25 months. Rainfall:—120.37 inches.								
MEANS OF 5 PLOTS:	*B. 41227	43.98	13.66	88.4	6.01	112.55	*B. 41227	19.86	102
	D. 37/45	42.74	14.01	89.2	5.99	112.17	D. 37/45	19.65	
	D. 158/41	46.22	12.34	82.7	5.70	106.74	B. 47225	19.54	
	B. 45270	37.45	14.67	90.1	5.49	102.81	B. 45270	18.02	
	B. 37161	36.70	14.91	90.4	5.47	102.43	D. 158/41	17.98	
	D. 58/43	39.43	13.27	86.3	5.23	97.94	D. 54/43	17.50	
	D. 54/43	40.49	12.80	86.0	5.18	97.00	B. 37161	17.31	
	B. 47225	33.38	14.94	91.0	4.99	93.45	D. 4/43	17.27	
	B. 46218	29.62	15.89	90.2	4.68	87.64	D. 58/43	17.16	
	D. 4/43	37.75	12.39	84.8	4.68	87.64	B. 46218	15.84	
	Mean:				5.34	100.00			
	Significant Difference, 20:1:				.60	11.24			
	Pln. Wales, Field 1 Sisters. Reaped 13.3.56 at 11.25 months. Rainfall:—103.68 inches.								
MEANS OF 5 PLOTS:	*B. 41227	33.91	14.58	90.4	4.94	117.90	*B. 41227	16.19	103
	B. 47419	31.39	14.89	89.9	4.67	111.46	D. 58/43	13.86	
	D. 58/43	34.95	12.54	84.6	4.38	104.53	B. 37161	13.82	
	B. 37161	27.08	15.01	91.5	4.06	96.99	B. 47225	13.00	
	B. 47225	24.01	16.37	90.7	3.93	93.79	D. 54/43	11.58	
	D. 54/43	26.59	11.92	83.8	3.17	75.66	†B. 47419	8.78	
	Mean:				4.19	100.00			
	Significant Difference, 20:1:				.65	15.51			

* Standard Cane.

† Results for Plants and 2nd Ratoons.

E. VARIETY PERFORMANCE SUMMARY.

Varieties under test in 1956 are discussed under the following captions:—

1. Standard Canes.
2. Barbados and Demerara Seedlings produced prior to the 1944 Series.
3. Barbados and Demerara Seedlings of the 1944, 1945 and 1946 Series.
4. Barbados Seedlings of the 1947, 1948 and 1949 Series.
5. Barbados 1950 and 1951 Series.
6. Demerara 1952 Seedlings.
7. Demerara-Mauritius, 1953 Seedlings.
8. Varieties of other Countries.

1. Standard Canes.

B.37161, (B.3365 x B.603) .

Trial Nos.: 83, 98, 102, 103, 128, 149, 150, 154, 155.

B.41227, (B.35207 x P.O.J.2878),

Both of these varieties continue to perform well in trials and there is little to add to the comments made on them in previous Bulletins. B.41227 continues to give higher average yields than B.37161 in trials and the comparison of the results from all trials in which these standard canes have both been included are brought up to date in the following table (Table V), which demonstrates their relative merits as disclosed by trials over a wide range of local conditions.

TABLE V.

Soil Type.	Variety.	Tons Available Pol. per Acre.			Mean Pol. % Cane.
		Plants.	1 R.	2 R.	
Clays	B. 41227	6.52 (26)	5.07 (25)	4.37 (22)	12.91 (73)
„	B. 37161	5.87 (26)	4.94 (25)	4.09 (22)	12.77 (73)
Pegassy Clays	B. 41227	5.66 (9)	5.31 (7)	4.61 (4)	12.64 (20)
„ „	B. 37161	5.26 (9)	5.02 (7)	4.04 (4)	13.15 (20)
All Experiments ..	B. 41227	6.30 (35)	5.13 (32)	4.41 (26)	12.89 (93)
„ „ ..	B. 37161	5.72 (35)	4.96 (32)	4.08 (26)	12.85 (93)

The figures in parentheses indicate the number of trials from which the means are obtained.

2. Barbados and Demerara Seedlings produced prior to the 1944 Series.

B. 4098, (B. 3439 x Co. 290).

The testing of this leaf scald resistant variety has clearly shewn it to be inferior to the standards in yield of sugar per acre and this is particularly true in respect to its yields as ratoons. It is not proposed to include this variety in new trials.

B. 4098 possesses a Pol. % Cane slightly above that of the standard.

B. 4362, (B. 37161 x P.O.J. 2878) .

Trial Nos. : 92, 99, 110, 116, 117, 120, 123, 127, 129.

The climatic conditions which prevailed in 1956, appeared to have been very suited to this variety as its yield relative to B.41227 as ratoons was better than that of previous years. Nevertheless, while B. 4362 is a consistent performer with a juice of good quality it does not generally equal B. 41227 in yield of sugar per acre. Thus, in fifteen reapings as Plant canes, B. 4362 has only twice beaten B. 41227 in tons sugar per acre, but it has done so in seven out of fourteen reapings as first ratoons, (although in no instance by significant amounts), while in six reapings as second ratoons the standard has only been beaten twice, in neither case significantly.

B. 4362 continues to suffer more severely from borer attacks than do most other commercial varieties. It is an early ripening variety which requires good drainage conditions and a heavy rainfall for best results. B.4362 is rated as tolerant to leaf scald disease but is moderately susceptible to Chlorotic Streak.

B. 4373, (B. 3354 x Co. 290).

Trial Nos.: 110, 127, 128, 131.

Under the climatic conditions of 1956, B. 4373 gave poor quality juices which resulted in reduced yields relative to B.41227. It was particularly poor in two trials on pegassy clays where its yield was approximately half of that of B. 41227.

B. 4373 has been tested widely but these tests have demonstrated that this leaf scald resistant variety is definitely inferior to the standards.

B. 43253, (B. 3439 x B. 37161).

Trial Nos.: 109, 122, 128, 129, 130, 142, 148.

In spite of its high sucrose content, this variety is unable to compete with B. 41227 and B. 37161 in yield of sugar per acre. Indeed, its yield relative to B. 41227 appears to become lower, the higher the rainfall.

B. 43413, (M.D. 47 x Co. 290).

Trial Nos.: 92, 131, 143, 149, 151.

B. 43413 has been reaped against B. 41227 in thirteen trials as plants in which it has beaten the standard on four occasions, once significantly. Of the nine occasions it has been beaten by B. 41227 as plants, three were by signifi-

cant margins, two of these occurring in 1956. As first ratoons, B. 43413 has beaten the standard in three out of ten reapings, none by significant amounts. As second ratoons, B. 43413 has beaten the standard in five out of nine reapings, two of these being by significant amounts.

B. 43413 is in general a fairly consistent performer on clay soils with a moderate rainfall and its yields tends to improve relative to B. 41227 as ratoons. Its stalks are of smaller than average diameter however, and its juice is generally of poorer quality than that of the standard.

B. 43413 is rated as tolerant to leaf scald disease.

D. 158/41, (Co. 421 x D. 166/34).

Trial Nos.: 93, 97, 99, 100, 102, 129.

Under the climatic conditions of 1956, this variety did not maintain its usual performance in the trials. It is likely that this was due to the fact that in 1956 arrowing in this variety occurred earlier than usual, which, combined with a much heavier than normal rainfall during the months of August, September and October (when this variety is usually at its best) produced a Pol. % Cane considerably below the average for this variety.

While D. 158/41, has performed well in certain localities it is an erratic performer on pegassy clays and in Spring reapings and is in general inferior to the standards in yield of sugar per acre.

D. 62/43, (Co. 421 x Co. 331).

Trial No. : 95.

The testing of this variety which is now completed, has shewn that while it is primarily an Autumn cane, as is typical of most heavy-arrowing cane varieties in British Guiana, it has also performed moderately satisfactorily as a Spring cane, particularly on silty clays. Its performance in Spring and Autumn reapings in trials are summarised as folllows:

Cycle.	Yield Index.		Avail. Pol. % Cane Index.	
	Spring.	Autumn.	Spring.	Autumn.
P.	95 (5)	115 (11)	98 (5)	106 (11)
1. R.	110 (5)	108 (11)	102 (5)	103 (11)
2. R.	80 (5)	109 (11)	93 (5)	97 (11)

D. 62/43 gives best results on clays with a moderate to heavy rainfall and possesses a juice of good quality. This variety is rated as being very susceptible to Leaf Scald disease however, and cannot therefore be recommended for extensive commercial planting.

3. Barbados and Demerara Seedlings of the 1944, 1945 and 1946 Series.

B. 45137, (B. 38272 x B. 34104).

Trial Nos.: 110, 120, 127, 129, 142, 149, 150.

B. 45137 continued to give heavy yields of cane in 1956, but its juice quality was poor, particularly as plants. As a result, its yield of sugar relative to that of B. 41227 was not as good as formerly. However, B. 45137 continues to produce vigorous stools and tends to improve relative to the standard as ratoons.

Although not an attractive cane, possessing stems of smaller diameter than average and a juice below average, B. 45137 has shewn itself to be a hardy cane and appears worthy of commercial trial on a limited scale. It is tolerant to leaf scald disease.

D. 37/45, (B. 34104 x Co. 331).

Trial Nos.: 92, 96, 99, 102, 116, 117, 122, 127, 129.

This variety has now been thoroughly tested. These tests have shewn it to be essentially an Autumn cane giving heavy yields if reaped during the months of September, October and November. It appears best suited to clays and a moderate rainfall. Its potentialities as an Autumn cane are clearly illustrated by the following summary of its yield and Avail. Pol. % Cane indices relative to B. 41227 in Spring and Autumn reapings in trials.

Cycle.	Yield Index.		Avail. Pol. % Cane Index.	
	Spring.	Autumn.	Spring.	Autumn.
P.	78 (7)	104 (11)	87 (7)	104 (11)
1 R.	83 (7)	113 (10)	97 (7)	103 (10)
2 R.	76 (2)	116 (9)	89 (2)	104 (9)

The figures in parentheses denote the number of trials reaped.

D. 37/45 appears best suited to clay soils and has performed particularly well on silty clays at Sophia. It possesses a juice of good quality and has a Pol. % Cane slightly above that of B. 41227. It is rated as being susceptible to both leaf scald and chlorotic streak disease.

B. 46351, (B. 35206 x P.O.J. 2878) .

Trial Nos.: 94, 95, 110, 123, 130, 151.

This variety has been fully tested and will not be included in further trials. It is an irregular performer, giving its best results relative to B. 41227 under good soil conditions and a moderate rainfall. Its yields are definitely inferior to those of the standards.

D. 39/46, D. 49/46, D. 106/46, D. 133/46, D. 141/46, D. 184/46 and D. 259/46 have all given good yields in trials at Sophia. Of these, D. 49/46, D. 141/46, and D. 184/46 are in several estates trials while the others will be placed in estates trials as rapidly as possible.

All of these canes arrow more or less heavily and it may therefore be anticipated that they will give their best results as Autumn crop canes.

D. 49/46, is a strong ratooner but possesses a juice below average in quality.

4. Barbados Seedlings of the 1947, 1948 and 1949 Series.

B. 4744, (Co. 421 x B. 4098).

Trial Nos. : 92, 95, 116, 117, 122, 127, 129.

B. 4744 has been reaped in thirteen trials as plants. On only one occasion *i.e.* on a Blairmont loam, has its yield of sugar as plants exceeded the standard. In most of the other reapings as plants it has been decisively beaten by B.41227.

In the same number of trials as first ratoons (thirteen), B. 41227 has been beaten in four but in no instance by a significant margin, while in six reapings to date as second ratoons B. 4744 has not exceeded the yield of the standard. It is thus in general definitely inferior to B. 41227.

Inspection of the results of these trials shews that with this variety, where the yield of cane is high, the Pol. % Cane tends almost invariably to be very low. Conversely, where the Pol. % Cane exceeds that of the standard, the tons of cane per acre tend to be considerably lower than that of B. 41227. Only in the case of the experiment on a *Blairmont loam* has this variety given yields of sugar and a Pol. % Cane equal to that of B. 41227, the mean yield of sugar for plants, first and second ratoons in this experiment being 5% higher than that of B. 41227, while the mean Pol. % Cane was 6% higher than that of the standard. Estates are therefore advised to give this variety a limited trial on this soil type..

B.4744 is rated as being Susceptible/Tolerant to Leaf Scald disease.

B. 47225, (B. 37161 x P.O.J. 2878) .

Trial Nos.: 85, 94, 96, 99, 100, 102, 103, 117, 120, 127, 130, 154, 155.

The behaviour of this variety in trials continues to follow the pattern of previous experiments. Plant cane yield while very variable, approach that of the standard as a general average, better results tending to be obtained on intermediate pegassy clays than on frontland clays. On ratooning, there is a very considerable reduction in yield which progressively declines relative to that of B. 41227 with ratoon age. This failure to give satisfactory ratoon yields occurs on all soil types. The performance of this seedling is best shewn by comparing its yields for the two major soil types in the trials reaped to date, as follows:

Cycle.	Yield Index.		Avail. Pol. % Cane Index.	
	Clays.	Pegassy Clays.	Clays.	Pegassy Clays.
Plants	89 (9)	111 (5)	98 (9)	104 (5)
1st Ratoons	91 (8)	88 (5)	104 (8)	100 (5)
2nd Ratoons	81 (6)	82 (2)	99 (6)	111 (2)

The trend for the Pol. % Cane and Yield which appears to be somewhat higher on pegassy clays than on heavy clays, may be taken to indicate that B. 47225 requires good drainage for best results. Its inability to rival B. 41227 as a ratooner will probably preclude this attractive variety from being widely planted in British Guiana.

B. 47225 is rated as Resistant to Leaf Scald disease. It possesses an Avail. Pol. % Cane slightly higher than that of the standard.

B. 47258, (B. 39254 x B. 34104) .

Trial Nos.: 92, 99, 123, 127, 128, 130, 131, 141, 150 154, 155.

B. 47258 continues to maintain its early promise and the previous recommendations to estates managements to extend their plantings of this variety can now be made with even greater confidence.

In fourteen reapings as plants, B. 47258 has exceeded B. 41227 in yield of sugar on nine occasions, three of these being by significant amounts. On the occasions that it has been beaten by the standard as plants, three have been by significant margins. In general, in tests reaped to date, B. 47258 is equal to B. 41227 as plants. As first ratoons, in eleven trials, B. 47258 has yielded more sugar than the standard in all but one instance. On only one occasion has the difference been significant however. As second ratoons, in the five trials reaped to date, B. 47258 has exceeded the standard twice but in none of these five trials is the difference between the two varieties significant.

B. 47258 is an attractive cane which appears equally suited to clays and pegassy clays. As a ratooner this variety appears the equal of B. 41227, while it possesses a higher Available Pol. % Cane than the standard.

To summarise, of the newer varieties which have been tested sufficiently extensively to yield reliable information, B. 47258 appears to be the one most likely to equal or surpass the present standards as a commercial cane in British Guiana.

B. 47258 is rated as Tolerant to Leaf Scald disease.

B. 47379, (B.37161 x B.4098) .

Trial Nos.: 93, 128, 131, 152, 154.

B. 47379 has been reaped on nine occasions as plants giving very erratic results relative to the standard. As plants, B. 47379 has exceeded the standard twice but has been decisively outyielded on five occasions. As first ratoons, B. 41227 has outyielded B. 47379 in each of the six trials reaped to date. Although it has beaten B. 41227 once in the three second ratoon trials reaped to date, the margin was not significant. On the other hand, the standard outyielded B. 47379 by a wide margin in the other two second ratoon trials. Further, B. 47379 possesses a lower Available Pol. % Cane than the standard and is definitely inferior to it both in respect to yield and quality.

B. 47419, (P.O.J. 2878 x B. 34104) .

Trial Nos.: 97, 103.

In view of the interest taken by certain East Bank Demerara estates in this variety, it has been included in two experiments for reaping in 1957. In the nine tests reaped to date as plants, B. 47419 has only once exceeded B. 41227 in yield of sugar. As first ratoons, this variety slightly improved its yield relative to B. 41227 but nevertheless only succeeded in beating the standard once in the seven trials reaped. In the three reapings as second ratoons, B. 47419 still further slightly improved its yield relative to the standard but in no case was the yield of the standard exceeded.

B. 47419 appears to give similar yields relative to the standard on heavy and pegassy clays. The only trial in which the yield of this variety exceeded that of B. 41227 was on a *Blairmont Loam* on which soil type it gave slightly higher yields as plants and first ratoons.

B. 47419 is rated as being Susceptible to Leaf Scald disease.

B. 49119, (B. 35218 x B. 4098).

Trial Nos.: 104, 107, 135, 141, 144, 146, 147.

This variety has been reaped to date in seven experiments as plants. In these it has exceeded the standard (B. 41227) in yield on three occasions, none significantly, but has itself been beaten once significantly in the other four trials. The nett result is that in the plant cane reapings to date, B. 49119 is slightly below the standard in yield. In the two reapings as first ratoons to date, B. 49119 has slightly exceeded the standard in yieid. While too few reapings have been obtained on which to base definite recommendations, on the basis of the results in nurseries it appears likely to to give yields that are comparable with those of the standards.

B. 49119 possesses stalks somewhat below average diameter, but the stools are well formed and possess many shoots.

In trials reaped to date, its juice quality is slightly below that of the standard.

Unfortunately, B. 49119 is rated as Susceptible to Leaf Scald disease and any extension as a commercial cane would have to be on a very moderate scale.

The other seedlings of the 1949 Barbados series which shewed some promise as plants, namely, **B. 4942, B. 4995, B. 49257, B. 49353** and **B. 49354,** have not shewn up well in the ratoon reapings in 1956 while even as plants, the 1956 reapings shewed that these varieties appear to prefer a more moderate rainfall than that to which they have been subjected during 1956.

5. Barbados 1950 and 1951 Seedling Series.

The most promising seedlings of the Barbados 1950 series, are **B. 5037, B. 50112, B. 50135** and **B. 50267** and these will be more widely tested in estates trials.

From the sorting trials of the Barbados 1951 series which were reaped in 1956, six varieties have been selected for further tests.. The remainder are still under observation as ratoons and in nurseries.

6. Demerara 1952 Seedlings.

Three sorting trials of this seedling series have been reaped as plants and one as ratoons. From the results obtained to date, ten of these seedlings have been selected for further trials but a further selection may be made when the results of the first ratoon trials scheduled for reaping in 1957 have been obtained.

7. Demerara-Mauritius 1953 Seedlings.

These seedlings were raised from "fuzz" obtained from a number of crosses made at the Sugar Experiment Station, Mauritius, at the request of Dr. H. Evans.

Two sorting-trials (Nos. 132 and 134) in which the best seedlings from these crosses were included, were reaped as plants in 1956. None of these seedlings

attained the yield of the standard (B. 41227) in these two experiments and the first ratoon results will be awaited before a further selection of these seedlings is made for future trials.

In general, the seedlings from these crosses do not stand up well to wet conditions while a high percentage developed Leaf Scald disease in the nurseries. Further, a relatively high percentage possessed a low Pol. % Cane which is also a characteristic feature of the standard Mauritius canes, M. 134/32, M. 213/40 and M. 423/41 under the heavy rainfall conditions of British Guiana.

8. Varieties of Other Countries.

Several varieties from other countries are now under test but except in the case of the Mauritius seedlings **M. 134/32, M. 213/40** and **M. 423/41; the Javan** seedlings **P.O.J. 2967 and P.O.J. 3016;** and the Australian seedling **Pindar,** there is insufficient data to justify making any comments at this time. The tests reaped to date have shewn the above Mauritius and Javan seedlings to be quite unsuited to the heavy rainfall and soil conditions that prevail in Britsh Guiana as may be seen from the following summary of the results of the trials to date.

Variety	Pol. per Acre Index (B.41227=100)*			Pol. % Cane Index (B.41227=100).
	Plants	1 R.	2 R.	
M.134/32	75 (6)	54 (3)	72 (1)	94 (10)
M.213/40	91 (7)	88 (4)	107 (1)	94 (12)
M.423/41	80 (7)	68 (6)	60 (3)	90 (16)
P.O.J.2967	63 (6)	60 (4)	—	97 (10)
P.O.J.3016	73 (10)	70 (6)	—	103 (16)

* The figures in parentheses denote the number of trials on which the indices are based.

Pindar.

Trial Nos.: 114, 141, 142, 145, 147, 148, 149, 150, 152, 153, 154, 155.

This variety has been reaped on twelve occasions as plants and once as first ratoons. The yields as plants relative to B. 41227 have been very variable. As plants, Pindar has exceeded the standard in yield in three reapings, none by a significant margin but has itself been beaten by significant amounts on three occasions by the standard. In these trials Pindar has performed somewhat better on the pegassy clays than on the frontland and other clays but in general as plants it has proved itself inferior to B. 41227.

In the single trial reaped as first ratoons to date, Pindar has been significantly beaten by B. 41227.

In general appearance, Pindar is an attractive cane with a juice as plants about equal to that of B. 41227. It arrows fairly heavily in the Autumn and it might be implied that it is unlikely to do as well in Spring as in Autumn reapings. However, Pindar has given its best performance as plants in the single reaping made in the Spring, (on a pegassy clay), and more data is required before an accurate assessment can be made of the value of this variety in British Guiana.

F. GENERAL SUMMARY AND RECOMMENDATIONS.

The 1956 cane variety trials have continued to show that the present major standard, B. 41227, is a difficult cane to surpass owing to its good average all-round performance. However, B. 47258 and B. 49119 are likely to prove close rivals. B. 47258 in particular has done sufficiently well in tests to justify its further extension on the commercial scale. This variety is not only an attractive cane but possesses a Pol. % Cane that is above average for British Guiana. In trials reaped to date it has shewn itself to be a satisfactory ratooner and has the great advantage over the present standards of being tolerant to Leaf Scald disease.

B.49119 has performed reasonably satisfactorily as a plant cane but it is as a ratooner that it has so far shewn to best advantage. Unfortunately, this promising variety is rated as Susceptible to Leaf Scald disease. It is also not as attractive as B. 47258, the stalks tending to be below average diameter, particularly as ratoons.

Amongst other canes under test, it is believed that B.45137, B.43413 and D.37/45 have a place in commercial cultivations. B.45137 is a hardy cane which ratoons strongly but unfortunately possesses a Pol. % Cane below average for British Guiana. B.43413 has been a fairly consistent performer against B.41227 and continues to be worthy of trial on a small scale on sugar estates.

D.37/45 has shewn itself to be outstanding when reaped in September, October and November and is particularly suited to silty clays. It is recommended that nurseries of heat-treated material be planted to serve as a basic stock for planting on a moderate scale for reaping in these months.

Attention is again called to the recommendation made last year regarding B.41227, which, as a late-maturing variety should not be planted in blocks of fields in which early-maturing varieties are also planted, as maximum yields cannot then be obtained if the fields of the block are to be reaped at approximately the same time.

The performance of the more promising and outstanding varieties under test are compared with B.41227 in Table VI. The comparisons are on the basis of yields of Available Pol. per Acre relative to B. 41227 which is rated as 100. Pol. % Cane ratings are compared similarly.

On the basis of the results obtained from the trials and from observations of the estates cultivations, the following general recommendations are made.

Cane Variety.	SOIL CLASS			
	Berbice Frontland Clay.	Demerara Frontland Clay.	Riverside Clays.	Pegasse.
B. 41227	55	55	50	45
B. 37161	30	30	35	40
B. 47258	10	10	10	10
B. 45137 B. 43413 B. 46378 D. 37/45	5	5	5	5

TABLE VI.—The more Outstanding Varieties Compared with B. 41227.

Variety.	No. of Comparisons.			Available Pol. Per Acre Index. (B. 41227 = 100).			Tons Avail. Pol. per Acre. (B. 41227 = 100).			Available Pol. % Cane Index. (B. 41227 = 100).
	P.	1 R.	2 R.	P.	1 R.	2 R.	P.	1 R.	2 R.	Mean All Cycles.
D. 62/43	16	16	16	108	109	103	6.60	5.52	4.57	100
D. 37/45	18	17	11	93	101	109	5.68	5.12	4.84	102
B. 47258	14	11	5	102	109	98	6.23	5.52	4.35	103
B. 45137	15	12	7	91	103	112	5.56	5.22	4.97	98
B. 41227	—	—	—	**100**	**100**	**100**	**6.11**	**5.07**	**4.44**	**100**
B. 43413	13	10	9	96	97	105	5.87	4.92	4.66	99
B. 37161	35	32	26	91	97	94	5.56	4.92	4.17	100
B. 47225	14	13	8	97	90	81	5.93	4.56	3.60	102
D. 158/41	10	10	9	96	89	96	5.87	4.51	4.26	95
D. 54/43	10	10	9	88	90	91	5.38	4.56	4.04	90
D. 4/43	13	10	10	90	94	92	5.50	4.77	4.08	96
D. 58/43	6	6	6	92	91	92	5.62	4.61	4.08	92
B. 46378	18	18	17	94	89	96	5.74	4.51	4.26	97
B. 4362	15	14	6	93	97	88	5.68	4.92	3.91	109
B. 4098	15	13	13	92	92	84	5.62	4.66	3.73	103
B. 34104	21	19	16	84	81	83	5.13	4.11	3.69	99
B. 43253	10	8	3	88	84	87	5.38	4.26	3.86	110
B. 46351	15	13	11	87	92	84	5.32	4.66	3.73	97
B. 4744	13	13	6	86	92	84	5.25	4.66	3.73	98
B. 47419	9	7	3	90	92	97	5.50	4.66	4.31	97
B. 47379	9	6	3	87	89	84	5.32	4.51	3.73	90

The figures given refer to the percentage of the area in the particular soil type recommended to be planted in the respective varieties.

These recommendations may be modified in accordance with the results from trials to be reaped in the future. Where conditions on certain estates appear to favour a particular variety more than another the management will necessarily be guided by local experience.

2. GROWTH AND RIPENING STUDIES OF THE CANE VARIETIES B.41227, B.37161, D.158/41 AND D.37/45.

II. FIRST RATOON CYCLE.

BY

L. S. BIRKETT, C. CAMERON and H. GOMES.

The experiments on the growth and ripening of the four "type" varieties, B. 41227, B. 37161, D. 158/41 and D. 37/45 continue to yield very interesting data.

The first ratoon results are presented in Tables I, II and III while for more easily following the trends the main data are also presented graphically in Figure I.

DISCUSSION OF RESULTS.

1. SOPHIA 7 E.

Reaped: December, 1955.

TABLE I.

Age in Months.	Tons 96° Sugar per Acre.				Pol. % Cane.			
	B. 41227	B. 37161	D. 37/45	D. 158/41	B. 41227	B. 37161	D. 37/45	D. 158/41
8 Months ..	4.13	3.43	3.43	3.15	11.18	10.56	10.94	11.54
10 „ ..	5.40	4.57	4.18	4.42	13.62	12.83	13.11	13.60
11 „ ..	6.27	5.42	5.13	4.60	14.07	13.31	13.56	13.96
12 „ ..	5.69	4.33	5.53	4.58	13.66	12.71	13.23	13.42
14 „ ..	5.66	5.20	6.06	4.64	13.51	12.66	13.51	13.66

In considering the first ratoon results from this experiment it should be noted that the rainfall of November and December just prior to reaping the experiment was very high. Also, that the varieties, D.37/45 and D.158/41 arrowed heavily and B.37161 moderately. B.41227 did not arrow.

Arrowing in D.158/41 occurred early and uniformly as is usual with this variety. While arrowing commenced early in D.37/45 it continued over a longer period than with D.158/41. B.37161 arrowed later than usual for this variety and its arrowing was not as extensive as usual for first ratoons.

B.41227. This variety attained its maximum yield and sucrose content at eleven months age. Thereafter, both yields and juice quality fell slowly owing to the heavy rainfall.

It should be noted that B.41227 outyielded the other varieties at all ages except at fourteen months age when it was surpassed by D.37/45.

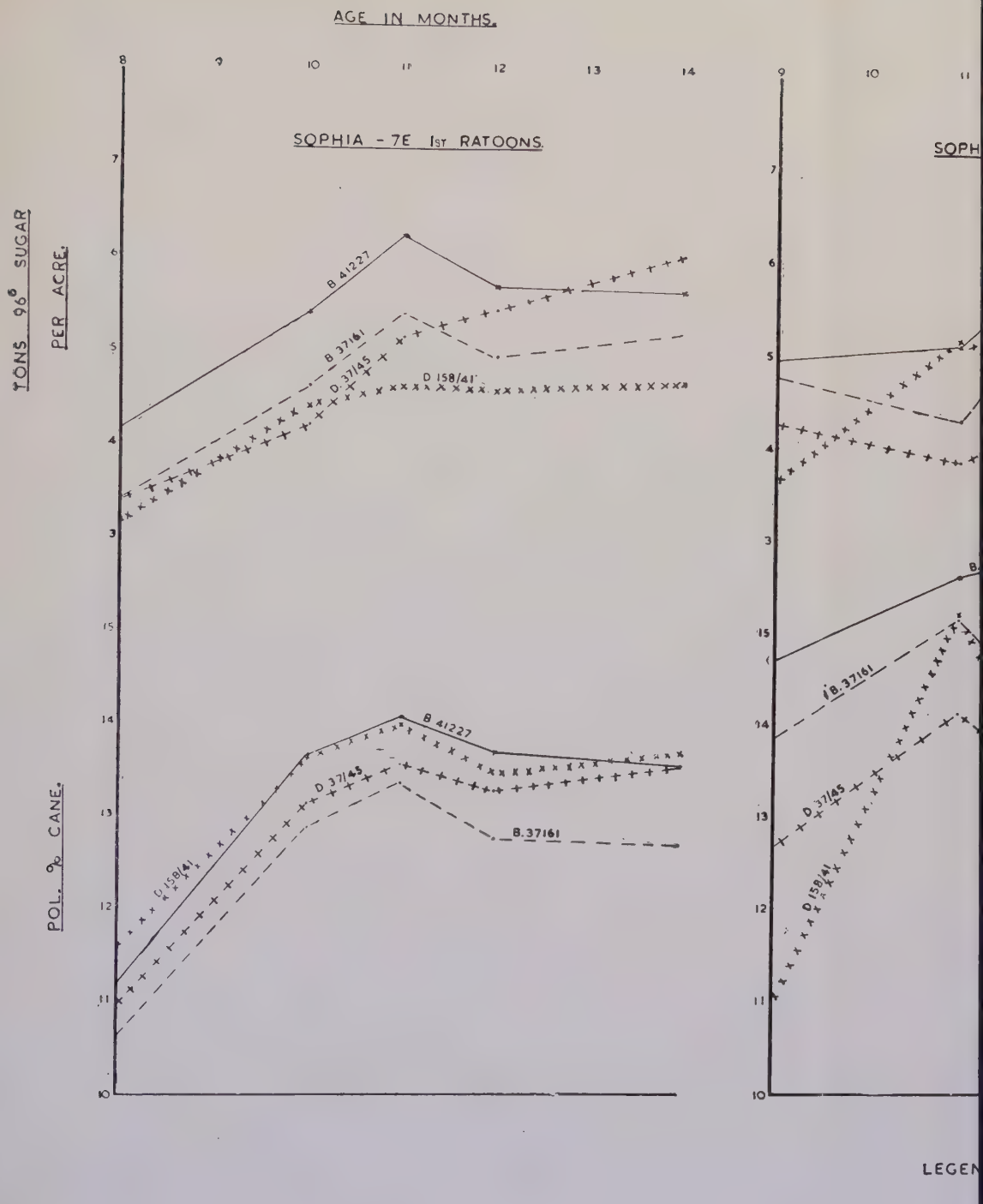
AGE IN MONTHS.
SOPHIA - 7E 1ST RATOONS.
TONS 96° SUGAR PER ACRE.
POL. % CANE.
B 41227
B 37161
D 37145
D 158/41
8
9
10
11
12
13
14
7
6
5
4
3
15
14
13
12
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FIGURE I.

AGE IN MONTHS.

12 13 14 15

A 13E. 1st RATOONS

B.41227

B.37161

D.158/41

D.37/45

41227

AGE IN MONTHS.

9 10 11 12 13 14

SOPHIA - 4E. 1st RATOONS

D.37/45

B.41227

D.158/41

B.37161

7 6 5 4 3 15 14 13 12 11 10

B.41227

B.37161

D.37/45

D.158/41

B.37161. In this experiment, B.37161 performed better than was expected in view of the heavy rainfall which followed arrowing prior to reaping. Like B.41227, this variety attained its maximum yield and sucrose content at eleven months with both yields and quality falling thereafter but with a tendency of improvement in yield at fourteen months. The fall in quality of the arrowed canes of this variety was considerably less rapid than was the case in the plant cane crop, while growing non-arrowed canes continued to put on weight without any considerable reduction of quality. In consequence of these two effects, the fall in yield with heavy rainfall following arrowing was less precipitous than would have been anticipated from the plant cane results.

D.37/45. Considering the conditions which prevailed just prior to reaping, this variety also performed better than would have been expected from past experience which shewed that its arrowed stalks tended to deteriorate very rapidly when heavy rainfall follows arrowing. The explanation for the unusual behaviour of D.37/45 in this instance appears to be due to the fact that while this variety arrowed heavily, arrowing commenced early and spread over a moderately lengthy period so that there was no sudden influence on yield and quality from the interaction of the factors arrowing and weather. At the same time, the non-arrowed canes continued to grow and increase in weight very rapidly throughout the entire period of growth with a comparatively small decrease in sucrose content after twelve months age. The nett result was an overall increase in yield of sugar per acre up to the maximum age of reaping *i.e.*, fourteen months.

This experiment has again demonstrated that the stalks of D. 37/45 grow and ripen very rapidly when arrowing has not occurred and conditions in other respects are favourable to growth. Also, that under such conditions it is a late maturing variety. It is also important to note that in this experiment the Pol. % Cane in this variety did not follow the yield curve as was the case in the plant cane crop.

D.158/41. This variety arrowed early, uniformly and heavily. The arrowed canes which formed the majority of the stalk population attained their maximum in yield and quality at the early age of eleven months, the corresponding maximum for the non-arrowed stalks occurring at twelve months age. Thereafter, although the *quality* of both arrowed and non-arrowed canes deteriorated, the increased growth of the non-arrowed canes about just balanced the loss of sugar from the arrowed canes and maintained the total yield of sugar per acre at a relatively constant level between eleven and fourteen months age.

2. SOPHIA 13 E.

Reaped: March, 1956.

TABLE II.

Age in Months.	Tons 96° Sugar per Acre.				Pol. % Cane.			
	B. 41227.	B. 37161	D. 37/45	D. 158/41	B. 41227	B. 37161	D. 37/45	D. 158/41
9 months ..	4.97	4.74	4.29	3.62	14.70	13.82	12.68	10.95
11 „ ..	5.05	4.21	3.88	5.15	15.59	15.15	14.11	15.29
12 „ ..	6.02	5.56	4.37	4.79	15.87	14.13	13.38	13.06
13 „ ..	7.11	6.06	5.06	6.27	15.88	13.47	14.32	14.47
15 „ ..	6.98	5.98	6.21	6.29	13.32	13.40	15.18	12.24

This experiment was reaped in March 1956. The rainfall for the preceding months of January and February was slightly below the average for these months but that of the three weeks in March preceding reaping was heavier than usual, seven inches of rain having fallen in this period. This pre-reaping rainfall appears to have affected the *quality* of the older aged canes in the case of B. 41227 and D. 158/41 very considerably, but so heavy was the stand of cane in these varieties at fifteen months age that the yield of sugar was still very high.

In this experiment, B. 41227 did not arrow.

B. 41227. This variety continued to give increases in yield of 96° sugar up to fourteen months age, but a slight fall in yield and a considerable fall in Pol. % Cane occurred at fifteen months age as a result of the heavy rainfall on cane which had already attained its maximum growth.

It should be noted that in this experiment also, B. 41227 outyielded the other varieties at all ages except in the single case of D. 158/41 at eleven months age.

B. 37161. Arrowing commenced in this variety at about ten months age when approximately ten percent of the stalks of millable cane had arrowed, this percentage increasing up to fourteen months age when thirty-seven percent of the stalks had done so. At ten to eleven months age, the arrowed stalks possessed a higher sucrose content than the non-arrowed but at greater ages the reverse was the case.

Apart from a small reduction in yield at eleven months, B. 37161 continued to give increases in yield of sugar up to thirteen months of age, following the same pattern as in the plant cane crop for reapings at this period of the year and again demonstrating that under favourable growing conditions and in the absence of heavy arrowing it is not an early maturing variety. However, under the conditions that pertained during the 1956 Spring crop the average Pol. % Cane decreased during this period of yield increase and in consequence the Pol. % Cane and yield curves do not follow the same course.

D. 37/45. As in the plant cane crop of this experiment reaped the previous Spring, D. 37/45 continued to grow and ripen rapidly.

Arrowing was relatively uniform, arrows first appearing at ten months age, while fifty-six percent of the millable stalks had arrowed at twelve months age. Thereafter, the percentage of arrowed stalks fell steadily until it was approximately forty percent at fifteen months age. In this case the non-arrowed canes possessed a higher Pol. content than the arrowed at all ages. Growth of non-arrowed canes was rapid and from eleven months age onwards, yields of sugar per acre increased steadily up to the maximum age reaped. Except at eleven months age, the average Pol. % Cane increased as the yield increased.

D. 158/41. In this experiment, this variety duplicated its plant crop performance in that apart from a small drop in yield at twelve months, the yield of sugar increased steadily throughout, the maximum being attained at the highest age.

D.158/41 arrowed uniformly, a census of the stalks of millable cane from plots selected at random giving the percentages of stalks arrowing at 77%, 98%, 96% and 92% at 11, 12, 13 and 15 months age respectively. In this variety, the arrowed stalks were of higher sucrose content than the non-arrowed at all ages.

3. SOPHIA 4 E

Reaped: August, 1956.

TABLE III.

Age in Months.	Tone 96° Sugar per Acre.				Pol. % Cane.			
	B. 41227.	B. 37161.	D. 37/45.	D. 158/41.	B. 41227.	B 37161.	D 37/45.	D. 158/41.
9 Months ..	3.90	3.90	5.11	4.58	13.50	12.55	12.90	12.78
11 „ ..	6.03	5.16	6.51	5.86	13.90	12.57	14.18	13.84
12 „ ..	6.23	5.02	6.83	6.11	15.18	13.10	14.14	14.47
13 „ ..	4.32	3.79	4.80	3.96	14.04	13.80	13.64	13.95
15 „ ..	5.77	4.09	6.30	5.32	12.26	12.01	13.27	11.77

This experiment was reaped on the 1st August, 1956, following the heavy mid-year rainy season in which the rainfall for the month of July was 17.24 inches, or nearly 5½ inches above the annual average for this month. In spite of this, good yields were obtained from all varieties, particularly D.37/45 which had commenced to arrow at fourteen months age.

All varieties produced two definite yield maxima in this experiment which, (except in the case of D.158/41), could not be attributed to the effect of arrowing since neither B.41227 nor B.37161 arrowed, while D.37/45 had only commenced arrowing at about the time of the second peak in the yield curve of this variety. This phenomenon is considered below.

B. 41227. In this experiment, B. 41227 grew very rapidly and attained its maximum yield at twelve months age. During the following month the yield fell very considerably, probably as a result of the rapid growth of new tillers which drew much of the material for their growth from the older stalks. With the combined aid of this source of growth material plus that obtained as a result of their own photosynthesis, these new stalks produced very rapid growth and the yield again took an upward trend which had probably not attained its second maxima at the time of reaping at fifteen months age.

B. 37161. B. 37161 grew and matured rapidly between nine and eleven months age at which latter age it attained its first yield peak. Thereafter, until thirteen months age, yields again fell but commenced to rise towards a second peak which—as in B.41227—probably had not attained its maximum when reaped at fifteen months.

B.37161 did not arrow in this experiment.

D. 37/45. This variety grew exceedingly rapidly and at all ages outyielded the other varieties, its first yield peak occurred at twelve months age. There

was a considerable reduction in yield at thirteen months age but this was followed by a rapid recovery at fifteen months when the yield again took an upward trend which probably had not attained the second maximum at the time of reaping.

D. 158/41. This was the only variety which arrowed heavily in this experiment, arrowing having occurred at eleven months age. At eleven and twelve months age the arrowed canes were of higher sucrose content than the non-arrowed.

The yield curve of D.158/41 in this experiment followed the same pattern as that of the other three varieties, two yield peaks being evident.

It should be noted that in this experiment, the graph of the Pol. % Cane does not follow the yield curves.

SUMMARY

In general, the conclusions which were drawn from the plant cane results also apply to those obtained from the first ratoons. However, two aspects which call for further comment at this stage are, firstly, the two peaks which tend to be a feature of some of the yield curves, and secondly, the relationship between Pol. % Cane and Yield.

1. *Peaks on Yield curves.* When the data from these experiments are plotted in the form of yield curves, it will be observed that in many cases two yield peaks occur over a fifteen month period of growth. In the case of the arrowing varieties, the first peak usually occurs where these arrow at from nine to twelve months age and is usually followed by a fall in the yield curve, the degree of fall depending on climatic and varietal factors. In the cases of B.37161 and D.37/45 particularly, the fall in yield is usually appreciable where heavy rain immediately follows arrowing.

An arrowed stalk is no longer capable of further growth and when the first yield peak occurs at time of arrowing or just after, it represents the results of a high percentage of the primary stalks attaining maturity as is indicated by their arrowing. The subsequent decrease in yield which usually follows—particularly if heavy rains occur—is to be attributed to the stored sucrose of the matured stalks being used for the rapid growth of the immature ones at a greater speed than new sucrose is being synthesised *and stored.* Eventually however, the rate of synthesis and storage by the growing stalk population usually again overtakes the rate of consumption of sucrose from the matured stalks and the yield curve again rises. If growth conditions are favourable, the second yield peak may occur comparatively rapidly and represents the point of maturity of a majority of the secondary stalks.

The stalks of non-arrowing varieties, such as B.41227, (or of normally arrowing varieties which have not received the requisite combination of essential factors for arrows to be formed), also attain a point of physiological maturity. The behaviour of such stalks appears to be similar to that of arrowed stalks with corresponding effects in so far as the yield curve is concerned. In such cases, the first peak in the yield curve corresponds to the attainment of

physiological maturity in a majority of the primary stalk population. The second peak in non-arrowing varieties would correspond to a similar state of affairs in the secondary stalk population.

It follows from the foregoing that the nature of the yield curve will depend not only on the climatic conditions and varietal factors controlling length of growth of individual stalks prior to these attaining maturity, but also on the uniformity in the development and maturity of primary and secondary stalks.

2. *Relationship between Pol. % Cane and Yield.* In the plant cane crop, there was a moderately satisfactory relationship between the Pol. % Cane and the resulting yield of 96° sugar per acre. Such a relationship did not always hold in the case of the first ratoon crop.

It appears from the results obtained to date from this series of experiments that the first yield peak can in most cases be determined from the Pol. % Cane data, but the second peak of tons sugar per acre cannot be determined by this means. Under the climatic conditions that prevail in British Guiana, the desirability of awaiting a higher yield at the second yield peak will probably not be a sound economic proposition since there is usually a considerable fall in cane quality at this stage which would increase transportation and factory costs per ton of sugar while the time taken for the attainment of the second yield peak would reduce the rate of turn-over of land. More data over a wider range of climatic and soil conditions on this and other aspects noted in the foregoing discussion are desirable however.

3. FERTILIZER EXPERIMENTS.

BY

L. S. BIRKETT, C. CAMERON AND H. PAUL*.

The fertilizer experiments reaped in 1956 consisted of eight N. P. K. experiments of which three were continuation experiments on the same sites and with the same treatments as formerly[1], while the other five, (which had been reaped in 1955 as N. P. K. experiments of the same type as the foregoing), were used to test the residual effects of the potash and phosphate applied the previous year[2].

In addition, since previous tests [3], [4], had shewn highly significant responses to applications of limestone at Sophia and elsewhere, it was decided to repeat these experiments in conjunction with foliar and juice analyses in order that the fundamental reasons for such responses might be determined. In consequence, three experiments on liming were laid down at Sophia and another experiment of the same type was also laid down on a pegassy clay where a response to liming was anticipated, in order to determine whether the nature of the responses obtained on the various soils was similar or dis-similar.

Two experiments were also reaped to test the relative values of different forms of (a), nitrogen, and (b), phosphate, as sources of these nutrients under local conditions.

Finally, since modern cane varieties seem in general to be more specific in their soil and other requirements than were the old standard commercial varieties, it appears desirable that the possibility of this being due to varietal differences in nutrient requirements should be explored and two experiments to investigate this aspect in respect to nitrogen were reaped in 1956.

(i). N-P-K EXPERIMENTS.

YIELD DATA.

The yields of 96° sugar per acre for the various treatments in the eight N-P-K experiments are presented in Table I.

DISCUSSION OF RESULTS.

A. Continuation Experiments.

Sophia, 17 W. Second Ratoons, B. 41227. Soil Type: Blairmont Loam.

In this continuation experiment, the relative yields from the various fertilizer treatments followed the same pattern as in the plant cane and first ratoon crops. However, the differences between treatments as second ratoons were not statistically significant as was the case in the two previous crops and this may be due to the causes of the observed yield differences becoming rectified by the continued application of potash and calcium superphosphate over the three years, or possibly to better growth conditions having prevailed in 1956

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TABLE 1.

N-P-K FERTILIZER EXPERIMENTS REAPED IN 1956 — YIELD, TONS 96° SUGAR PER ACRE.

Experiment.	Soil Type	Cane Variety.	Cycle.	TONS 96° SUGAR PER ACRE.						
				Control.	N_3.	N_6.	N_6P_6.	N_6K_4.	$N_6P_6K_4$.	Signif. Diff.
A. Continuation Experiments.										
Sophia — 17 W.	Blairmont Loam.	B. 41227	2nd R.	3.98	5.39	5.69	6.03	5.84	6.15	—
Sophia — 7 W.	Blairmont Clay.	„	„	2.02	3.41	5.24	4.89	5.43	4.88	0.82
Wales — 51 V.B.	Intermediate Pegassy Clay.	„	„	5.91	6.06	6.30	6.59	7.46	7.72	0.80
B. Residual Effects Experiments.*										
Blairmont— 9 R.P.	Frontland Clay.	B. 41227	1st R.	4.57	4.99	4.84	4.55	4.40	4.86	—
Bath — 14 V.	„ „	„	2nd R.	5.01	5.04	5.34	5.54	5.63	5.92	—
Bath — 2 F.	„ „	„	„	2.79	2.54	2.54	3.57	2.48	3.44	0.62
Bath — 20 O.B.	„ „	„	„	4.11	3.56	3.67	4.13	4.09	4.15	0.44
Blairmont— 19 O.	„ „	„	3rd R.	6.89	6.68	6.83	7.20	6.64	7.60	—

*** All plots received sulphate of ammonia ONLY in 1956, (rate = 94 lbs. Nitrogen per acre). The column captions for the Residual Effect Experiments pertain therefore to the fertilizer treatments of the previous crop.**

than in the two preceding years. The fact that applications of potash and calcium superphosphate result in an increase in yield when applied singly while their effects are not additive when applied together has been amply confirmed in the case of this experiment. On the other hand, leaf analyses do not indicate that the response to these fertilizers can be attributed to deficiencies of phosphate or potash although the potash levels in the ratoons at the N_6 level are around the tentative critical level and it may be that the critical level may have to be raised for this nutrient in the case of cane grown on the lighter soils.

The adequacy of the supplies of phosphate has also been confirmed by juice analysis. In the absence of data indicating that the responses obtained are attributable to any actual overall deficiency of the nutrients applied an explanation of the observed results is difficult until more is known of the interactions involved within the plant or soil, or both.

Sophia, 7 W. Second Ratoons, B. 41227. Soil Type: Blairmont Clay.

In this experiment also, the relative yields obtained from the various fertilizer treatments as second ratoons also followed the same pattern as with the plant cane and first ratoon crops. Applications of nitrogen gave the usual increases in yields. The most economic rates of application of nitrogen were obtained by the application of 2½ cwt. of sulphate of ammonia to plants and 4 cwt. to ratoons. Phosphate by *leaf analysis* was adequate for plants and first ratoons but slightly inadequate in second ratoons. *Juice analysis* indicated adequate phosphate supplies for all crops and in no crop cycle was a significant response to phosphate obtained. A significant response to potash was only obtained in the first ratoons. *Leaf analysis* shewed adequate supplies of potash in all three crop cycles.

Wales, 51 V.B. Second Ratoons, B. 41227. Soil Type: Intermediate Pegassy Clay.

This continuation experiment yielded some very interesting results. For example, in no crop was a statistical response to nitrogen obtained. The yields from the control plots shewed that nitrogen availability was very high, either owing to there being an ample reserve of available nitrogen in the organic matter present or to a high rate of nitrification occurring in this soil, or both. The fact that applications of nitrogen gave no significant response in yield, particularly in the case of the ratoons, is very unusual in British Guiana. Further, all plots (including the control plots) gave higher yields as second ratoons than as plants or first ratoons, shewing the very considerable influence which climatic conditions can exert.

In this field, there were increases in yield as *plants* from both potash and phosphate applications which were just short of significance in each case. The increase in yield from these nutrients in conjunction was highly significant however.

The foliar analyses indicated that phosphate was adequate but potash inadequate for maximum yields. Juice analyses at time of reaping gave a phosphate content just short of the level considered as adequate for B. 41227.

The *first ratoon* yields were similar to those of the plant cane crop except that while the response to phosphate was again just short of significance that

to potash attained significance. Again, the response to potash and phosphate in conjunction was highly significant statistically. Leaf and juice analyses were also similar to those of the plant cane crop except that the potash level in the leaf indicated an adequate supply of this nutrient.

The *second ratoon* yield results followed exactly the same pattern as those of the first ratoons and applications both of potash and of phosphate are recommended for this field and those of the same soil type in the immediate vicinity. Nitrogen applications below that of the usual standard rates would appear to be desirable but this should continue to be checked by leaf analyses.

Leaf and juice analyses in the second ratoon cycle shewed phosphate to be just adequate but leaf analysis indicated a deficiency of potash.

B. Experiments to Test the Residual Effects of Potash and Phosphate.

In the five experiments under this head, each plot received a standard dressing of 4 cwt. of sulphate of ammonia per acre in 1956 *i.e.* 94 lbs N. per acre. Hence, the nitrogen levels indicated in the column captions of Table I, are those of the previous cycle.

Blairmont, 9 R.P. First Ratoons, B. 41227. Soil Type: Frontland Clay.

In this field which in the previous cycle gave small responses in yield to potash and phosphate which were not significant either singly or in conjunction, no residual effects were observed in the first ratoons, as might be anticipated.

Bath, 14 V. Second Ratoons, B.41227. Soil Type: Frontland Clay.

In the previous first ratoon crop, significant responses were obtained to applications of nitrogen and phosphate and small but non-significant increases also resulted from the application of potash. Leaf analyses shewed phosphate to be slightly deficient but potash levels to have been satisfactory. In the second ratoons,. there were also increases in yield of 96° sugar from the plots receiving phosphate and potash but these were not statistically significant. As in the previous cycle, both juice and leaf analyses shewed phosphate to be deficient and an increased uptake of the nutrient where it was applied. The juice analyses data shewed the phosphate deficiency to be less in all plots as second ratoons than in the first ratoons however, and this probably accounts for the responses not being significant in this crop. It again demonstrates a variation in nutrient uptake from year to year, for which differences in climatic conditions are probably responsible.

Leaf analyses on the second ratoons again shewed potash supplies to be adequate and no statistical response to potash was obtained.

Bath. 2 F. Second Ratoons, B. 41227. Soil Type : Frontland Clay.

In the previous crop, both the leaf phosphate and potash were below the critical level. Significant yield responses were obtained from applications of nitrogen and phosphate but not from potash however. In the reaping as second ratoons in 1956, a significant residual response was obtained from phosphate but no residual effect was obtained from potash in spite of leaf analyses having shewn a deficiency of this nutrient.

In the second ratoon reaping in 1956, both *leaf* and *juice* analyses shewed higher contents of P_2O_5 in samples from the plots to which phosphate had been applied the previous year, thereby indicating that the plant was capable of obtaining phosphate from the residual supplies from the previous crop. The levels of P_2O_5 in all treatments were nevertheless inadequate and greater quantities of applied phosphate are necessary for optimum yields in this field and those in the surrounding area.

Leaf potash levels were low in each crop and a greater response to potash would be expected. Failure to obtain a response appears to be attributable to an insufficient uptake of the potash applied to the soil. This failure of the plant to take up potash in this experiment has been shewn in both first and second ratoons.

Bath 20, O.B. Second Ratoons, B. 41227. Soil Type: Frontland Clay.

In the first ratoon crop, significant responses were obtained to nitrogen and phosphate. Potash also increased the yield but the increments from this nutrient were not statistically significant. Leaf analyses indicated that both phosphate and potash were below the tentative critical level. The same yield responses were obtained in the second ratoon stage, the residual gain from the phosphate proving to be statistically significant but that from potash just failing to attain significance. Leaf analyses again shewed phosphate to be inadequate in the absence of applied phosphate with adequate levels obtained in both crops where phosphate had been applied. Juice analyses gave the same results. Both leaf and juice analyses also indicated that phosphate was available to the plant from the calcium superphosphate applied to the previous crop.

In contrast to the first ratoon analyses, leaf analyses shewed potash to be above the critical level in the second ratoon crop, again illustrating the variation in levels in the nutrients in the leaf with differences in climatic conditions.

Blairmont, 19 O. Third Ratoons, B. 41227. Soil Type: Frontland Clay.

In neither the second nor the third ratoon reapings were statistically significant responses obtained to applications of phosphate or potash although the former gave increases in the yield of sugar in both crops. *Leaf analyses* shewed phosphate to be adequate as second ratoons but below the critical level as third ratoons, while *Juice analyses* shewed the phosphate level to be bordering the critical level in each crop.

Leaf potash contents were above the critical levels in both crops.

The leaf analysis data for these N-P-K experiments are given in Table II and for Phosphate % Juice in Table III.

TABLE II.

FERTILIZER EXPERIMENTS REAPED IN 1956 — LEAF ANALYSIS DATA*.

Experiment.	Soil Type.	Cycle.	NITROGEN % LEAF DRY MATTER.			P_2O_5 % LEAF DRY MATTER.				K_2O % LEAF DRY MATTER.				
			Control.	N_3.	N_6.	Control.	N_6.	N_6P_6	N_6K_4	Control.	N_6.	N_6P_6.	N_6K_4	$N_6P_6K_4$.
A. Continuation Experiments.														
Sophia — 17 W.	Blairmont Loam.	2nd R.	1.44	1.73	2.08	.48	.45	.58	.44	1.64	1.45	1.45	1.64	1.76
Sophia — 7 W.	Blairmont Clay.	„	1.62	1.84	2.02	.40	.38	.68	.51	1.28	1.74	1.71	2.10	2.29
Wales — 51 V.B.	Intermediate Pegassy Clay.	„	1.79	2.04	2.15	.53	.51	.69	.68	1.25	1.13	1.10	1.98	2.12
B. Residual Effects Experiments.**														
Blairmont— 9 R.P.	Frontland Clay.	1st R.	1.98	2.04	2.06	.48	.45	.49	.44	1.60	1.58	1.64	1.72	1.89
Bath — 14 V.	„ „	2nd R.	1.83	1.79	1.76	.34	.33	.46	.34	1.49	1.56	2.05	1.93	2.07
Bath — 2 F.	„ „	„	1.64	1.58	1.59	.25	.24	.33	.34	1.18	1.13	1.18	1.28	1.28
Bath — 26 O.B.	„ „	„	1.87	1.79	1.75	.38	.37	.47	.37	1.57	1.52	1.45	1.69	1.71
Blairmont— 19 O.	„ „	3rd R.	1.77	1.83	1.83	.35	.36	.43	.43	1.49	1.47	1.49	1.71	1.93

*B.41227 planted in all experiments.

**All plots received sulphate of ammonia only in 1956, (rate = 94 lbs. Nitrogen per acre). The column captions for the Residual Effect Experiments pertain therefore to the fertilizer treatments of the previous crop.

TABLE III.

FERTILIZER EXPERIMENTS REAPED IN 1956 — JUICE ANALYSIS DATA.

Experiment.	Soil Type.	Cane Variety.	Cycle.	P_2O_5 % JUICE.					
				Control.	N_3.	N_6.	N_6P_6.	N_6K_4.	$N_6P_6K_4$
A. Continuation Experiments.									
Sophia — 17 W.	Blairmont Loam.	B. 41227	2nd R.	.048	.037	.030	.047	.032	.047
Sophia — 7 W.	Blairmont Clay.	„	„	.063	.049	.041	.058	.039	.060
Wales — 51 V.B.	Intermediate Pegassy Clay.	„	„	.020	.019	.017	.029	.019	.029
B. Residual Effects Experiments*.									
Blairmont— 9 R.P.	Frontland Clay.	B. 41227	1st R.	.023	.022	.022	.024	.023	.026
Bath — 14 V.	„ „	„	2nd R.	.009	.008	.008	.012	.009	.013
Bath — 2 F.	„ „	„	„	.003	.003	.003	.005	.003	.004
Bath — 20 O.B.	„ „	„	„	.013	.011	.011	.019	.012	.018
Blairmont— 19 O.	„ „	„	3rd R.	.014	.013	.015	.025	.017	.023

* The column captions for the Residual Effect Experiments pertain to the fertilizer treatments of the previous cycle. In 1956, all plots received 94 lbs. nitrogen per acre as Ammonium Sulphate.

(ii). LIMING EXPERIMENTS.

The experiments on liming which were conducted by the staff of the Experiment Station between 1930 and 1953, have already been reviewed[3] while the results of more recent experiments have also been published [4], [6], [7]. The more recent experiments have shewn that the responses which arise from the application of lime can be attributed to one or more of the following:

(i). To increasing the availability of phosphate.

(ii). To rendering potash more available.

(iii). To the reduction in toxic quantities of manganese, iron, and aluminium, which arise under conditions of excessive soil acidity.

(iv). To supplying a deficiency of calcium as a nutrient.

In addition, there are probably other beneficial results arising from liming which should be explored while it is particularly desirable that some information should be obtained on the economics of the practice, particularly as to the rate of leaching of lime from the various soil types and the magnitude and permanency of the effect of lime in rendering phosphate and potash available. The experiments to be described are intended to yield data in these connections.

Three soil types were included in the four experiments on liming which were reaped in 1956. All experiments compared the results obtained from three levels of limestone with those of unlimed plots. The rates of application of limestone were, nil, 3, 6 and 9 tons per acre, the treatments being designated as L_0, L_3, L_6 and L_9 respectively.

In addition, in two of the experiments, applications of phosphate were made in order that the effect of liming in rendering natural soil phosphates more available might be compared with that obtained from applied phosphate both, (i), from continued annual applications, as well as (ii), from a single application to the plant cane crop. The applications of phosphate were at the rate of 6 cwt. of single calcium superphosphate per acre.

In the plant cane cycle all plots received nitrogen at the rate of 94 lbs per acre in the form of ammonium sulphate.

YIELD DATA.

The yields of 96° sugar per acre as plants for the various treatments are presented in Table IV. The leaf and juice analyses are presented in Table V.

TABLE IV.

EXPERIMENTS ON LIMING, 1956.

Experiment.	Soil Type.	Cane Variety.	Cycle.	TONS 96° SUGAR PER ACRE.					
				Control.	L_3.	L_6.	L_9.	P_6.	P_6 R.
Sophia — 16 W.	Blairmont Loam.	B. 41227	Plants	6.06	8.05	7.05	6.58	—	—
Sophia — 8 W.	Blairmont Clay.	„	„	7.19	8.68	8.31	8.28	—	—
Sophia — 8 E.	Blairmont Clay.	„	„	8.26	8.56	9.12	9.26	8.50	8.51
Diamond— 94 G.D.	Pegassy Clay.	B. 37161	„	4.28	4.86	4.64	5.02	4.45	4.45

TABLE V.

Experiment.	NITROGEN % LEAF D.M.				K_2O % LEAF D.M.				P_2O_5 % LEAF D.M.						P_2O_5 % JUICE.					
	Control.	L_3.	L_6.	L_9.	Control.	L_3.	L_6.	L_9.	Control.	L_3.	L_6.	L_9.	P_6.	P_6 R.	Control.	L_3.	L_6.	L_9.	P_6.	P_6 R.
Sophia — 16 W.	1.65	1.63	1.78	1.78	1.61	1.55	1.49	1.64	.45	.47	.44	.41	—	—	.028	.032	.035	.037	—	—
Sophia — 8 W.	1.85	1.76	2.03	1.80	1.40	1.64	1.74	1.64	.52	.55	.50	.61	—	—	.030	.036	.041	.040	—	—
Sophia — 8 E.	1.90	2.00	1.85	1.86	1.42	1.45	1.45	1.46	.45	.45	.48	.51	.49	.51	.041	.042	.042	.047	.047	.049
Diamond— 94 G.D.	1.98	2.25	2.38	2.23	1.18	1.28	1.13	1.25	.46	.56	.55	.50	.53	.54	.033	.035	.037	0.35	.044	.044

DISCUSSION OF RESULTS.

Sophia, 16 W. Plant Cane, B.41227. Soil Type: Blairmont Loam.

In this experiment, yield increases were obtained from each rate of application of limestone, the highest increase being obtained from the 3 tons per acre rate of application with the yields decreasing successively at the 6 ton and 9 ton per acre rates.

However, the variation in plot yields was too great for these increases to be shewn to be statistically significant.

The nitrogen percent leaf dry matter shewed the level of this nutrient to have been too low for optimum yields.

Leaf analyses shewed the phosphate levels to be around the critical level, with a tendency for the level to increase at the 3 ton per acre rate of limestone and to be decreased by higher rates of application. In the *juice analyses* on the other hand, the phosphate contents proved to be above the critical level, while the phosphate contents of the juice increased progressively with the increase in rate of application of limestone.

Potash levels in the leaf were erratic but in all cases above the critical levels.

Sophia, 8 W. Plant Cane, B.41227. Soil Type : Blairmont Clay.

In this experiment, the yields from the limed plots were also higher than from the unlimed but again the variability in plot yields was such that the results could not be shewn to be statistically significant.

Juice analysis at time of reaping shewed that the phosphate content of the juice is increased as a result of liming, the increased uptake from a given rate of limestone per acre being greater in this soil type than in the foregoing. However, even in the unlimed plots, the phosphate supply was adequate for maximum yields and any increase in yield from liming cannot be attributed to the effect of liming increasing the availability of soil phosphate.

Leaf analyses shewed a tendency for the potash content of the leaf to increase from liming. A similar tendency is shewn by the phosphate contents.

The nitrogen contents of the leaf were below those required for optimum yields.

Sophia, 8 E. Plant Cane, B. 41227. Soil Type: Blairmont Clay.

In this experiment there was a steady increase in yield with increase in the amount of limestone applied although these increases are not statistically significant. There is also a tendency for yields to be slightly increased from the application of phosphate.

Leaf analyses shewed an increase in phosphate uptake both from phosphate and from limestone applications. In this experiment the potash content of the leaf is unaffected by the application of limestone and superphosphate.

Juice analyses shewed the uptake of phosphate to be increased with increasing rates of application of limestone. It is also increased by the application of calcium superphosphate.

In this experiment also, the nitrogen contents of the leaf are below those required for optimum yields.

Diamond, 94 G.D. Plant Cane, B. 37161. Soil Type: Pegasse.

The application of limestone to the pegassy soil of the experiment site gave increased yields but as in the previous experiments of this series these increases did not attain statistical significance. Small increases in yield, which were also statistically insignificant, resulted from the application of 6 cwt. of calcium superphosphate per acre.

From the *leaf analyses*, the nitrogen supply proved adequate for maximum yields, as did the level of phosphate. These analyses shewed potash to be inadequate however. While the applications of limestone and phosphate resulted in slight increases in the potash content of the leaves, the levels attained were in no case adequate for optimum yields.

Juice analyses confirmed the adequacy of the available supplies of phosphate.

(iii). RELATIVE VALUES OF VARIOUS NITROGEN AND PHOSPHATE FERTILIZERS.

(a). **Nitrogen**. In British Guiana, the nitrogen requirements of the sugar cane crop are almost completely supplied by sulphate of ammonia and previous tests with other sources of nitrogen have confirmed the suitability of this fertilizer for the purpose[3]. However, the tests referred to above suggested that ammonium nitrate was an even better source of the nutrient, while ammonium phosphate and urea which are now available had not been tried in the earlier experiments. Accordingly, an experiment was laid down at the Sugar Experiment Station to give information on these various fertilizers.

The first reaping as plants was made in 1956. The yield data and the P_2O_5 % Juice figures are presented in Table VI.

No fertilizer was applied to the control plots but all those to which the various nitrogenous fertilizers were applied received nitrogen at the uniform rate of 141 lbs of nitrogen per acre.

Since ammonium phosphate was used as one of the sources of nitrogen and consequently supplied phosphate in addition to nitrogen, an equivalent amount of phosphate (124 lbs P_2O_5 per acre) was applied as single calcium superphosphate with the other nitrogen fertilizers. Ammonium sulphate was however, tested both with and without phosphate.

TABLE VI.

Treatment.	Tons 96° Sugar per Acre	P_2O_5 % Juice.
Control	5.99	.041
Urea + Superphosphate	6.96	.036
Ammonium Chloride + Superphosphate	7.00	.036
Ammonium Nitrate + Superphosphate	7.41	.040
Ammonium Sulphate	7.48	.033
Ammonium Sulphate + Superphosphate	7.56	.036
Ammonium Phosphate	7.56	.039
Means	7.14	.037
Significant Difference	1.03	—

It will be noted that there is a significant yield response to 141 lbs nitrogen per acre but no response to phosphate as would be expected in view of the high P_2O_5 content of the juice from the control plots and those receiving only sulphate of ammonia.

It is also seen that there are no significant yield differences as between the various sources of nitrogen in the plant cane cycle.

(b) **Phosphate.** An experiment similar to the foregoing was also laid down on an intermediate pegassy clay at Diamond Estate to test the relative values of different phosphate fertilizers as sources of phosphate under local conditions. It was anticipated that this field would give a statistically significant response to phosphate but this in fact did not materialise. However, from the P_2O_5 content of the juices from the various treatments it is nevertheless possible to assess the availability of the phosphate from the various fertilizers used in the experiment. The data pertaining to the yield as plants and the uptake of P_2O_5 are presented in Table VII.

The phosphatic fertilizers were applied at rates giving 125 lbs P_2O_5 per acre in each case while all plots received nitrogen in the form of sulphate of ammonia at the rate of 141 lbs nitrogen per acre. The field in which this experment was placed, received an overall dressing of limestone prior to planting at the rate of 3 tons per acre.

The control plots of this experiment received limestone and sulphate of ammonia at the same rate as the plots receiving the various phosphates but no phosphate was applied to them.

The cane variety grown was B. 37161.

TABLE VII.

Phosphatic Fertilizer.	Tons 96° Sugar per Acre.	P_2O_5 % Juice	Lbs. P_2O_5 per Acre in Juice.
Control (No phosphate)	6.19	.0128	11.6
Reno Rock Phosphate	6.48	.0163	16.1
Basic Slag	6.59	.0165	16.4
Dicalcium Phosphate	6.78	.0143	14.5
Ground Rock Phosphate	6.88	.0150	15.3
Calcium Superphosphate	6.89	.0150	15.6
Means	6.64	.0150	14.9

The mean response to phosphate is 0.53 tons 96° sugar per acre which however, is not statistically significant. The various phosphatic fertilizers appear from the P_2O_5 % juice and from the lbs P_2O_5 per acre in the juice of the cane, to be equally satisfactory sources of phosphate on this soil type. Another experiment of this type on a non-pegassy clay is scheduled for reaping in 1957.

(iv). VARIETY-FERTILIZER EXPERIMENTS.

The varieties used in these tests were B.41227, B.37161, B.4362, B.4098 and D.37/45. The rates of nitrogen applied were, 0, 71 and 141 lbs nitrogen per acre. For easy reference these are designated N_0, N_3, and N_6, rates respectively, corresponding to 0, 3 and 6 cwt. of sulphate of ammonia per acre.

Sophia, 10 E. Plant Cane.

The more important data from this experiment are presented in Table VIII and Figure I.

TABLE VIII.

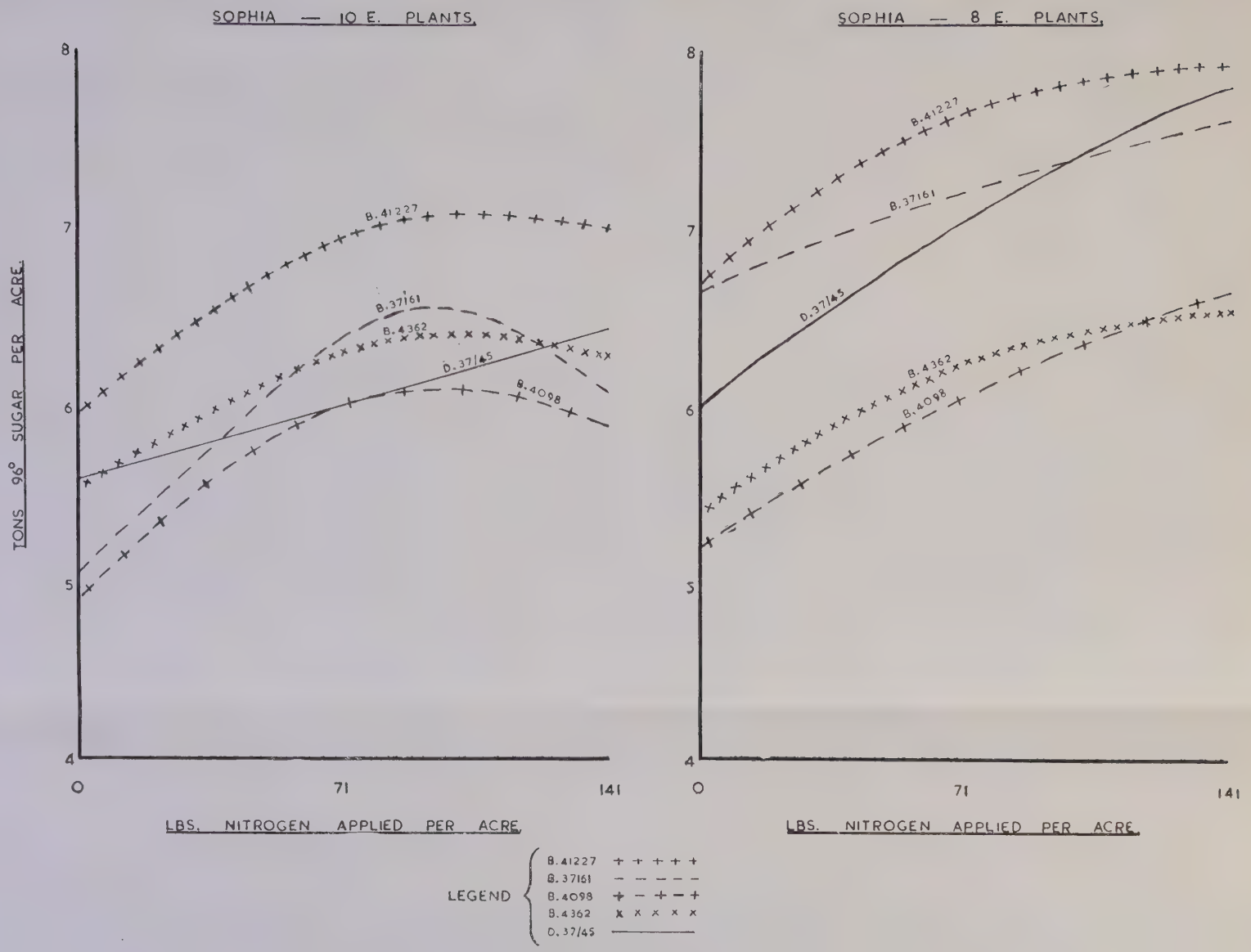
Cane Variety.	Tons 96° Sugar per Acre.			Pol. % Cane.		
	Lbs. Nitrogen Applied per Acre.			Lbs. Nitrogen Applied per Acre.		
	0	71	141	0	71	141
B.41227 ..	5.97	6.95	6.91	14.28	13.52	13 20
B.37161 ..	5.04	6.40	6.10	12.83	12.99	11.79
B.4362 ..	5.55	6.33	6.31	15.20	14.93	14.04
B.4098 ..	4.94	6.02	5.92	13.90	13.48	13.15
D.37/45 ..	5.59	6.00	6.44	13.88	13.14	12.83
Means. ..	5.42	6.34	6.34	14.02	13.61	13.00
Signif. Diff. ..	.99	.99	.99	1.26	1.26	1.26

From the yield data presented in Table VIII, it will be noted that the application of 71 lbs of nitrogen per acre gave increases in the yield of 96° sugar in all cases, the response being statistically significant in the case of B.4098, B.37161 and B.41227. Except in the case of D.37/45, (where a higher yield was obtained), the effect of a further similar application of nitrogen is a tendency for such addition to produce a decrease in yield. The differences in yield between the 71 lbs per acre rate of application of nitrogen and the 141 lbs. per acre rate are not however, statistically significant.

Except for D.37/45, the curve for which is almost linear, the yield curves of the other varieties are rather steep between the no "nitrogen" and the 71 lb. per acre nitrogen rates, with the curve maximum occurring slightly above the latter rate of application. For obtaining the maximum yield of 96° sugar from D.37/45, a rate of application in excess of the N_6 level is indicated under the conditions of this experiment.

The only statistically significant differences in yield between varieties is the margin by which B.4098 is exceeded by B. 41227 at the N_0 and N_6 levels of applied nitrogen.

FIGURE I.


SOPHIA — 10 E. PLANTS.
SOPHIA — 8 E. PLANTS.
TONS 96° SUGAR PER ACRE.
8
7
6
5
4
0
71
141
B.41227
B.37161
B.4362
D.37/45
B.4098
LBS. NITROGEN APPLIED PER ACRE.
LEGEND
B.41227
B.37161
B.4098
B.4362
D.37/45

In this experiment, each increase in the rate of application of nitrogen results in a fall in Pol. % Cane. In no case is the decrease in Pol. % Cane from nitrogen applications statistically significant however. There are, however, significant differences in Pol. % Cane as between varieties, B.4362 having a statistically higher Pol. % Cane than B. 37161, B.4098 and D.37/45 at the N_0 level, a statistically higher Pol. % Cane than all varieties at the N_3 level, but only B.37161 is exceeded by a significant margin at the N_6 level. B.41227 possesses a significantly higher Pol. % Cane than B.37161, at the N_0 and N_6 levels but not at the N_3 level, while B.4098 is significantly higher than B.37161 at the N_6 level.

Sophia, 8 E. Plants.

The more important data from this experiment are presented in Table IX and Figure I.

TABLE IX.

Cane Variety.	Tons 96° Sugar per Acre.			Pol. % Cane.		
	Lbs. Nitrogen applied per Acre.			Lbs. Nitrogen applied per Acre.		
	0	71	141	0	71	141
B.41227 ..	6.71	7.66	7.92	11.94	12.43	12.38
B.37161 ..	6.65	7.14	7.65	12.37	12.58	12.51
B.4362	5.38	6.26	6.56	12.38	14.19	14.04
B.4098	5.24	5.96	6.76	12.90	13.50	13.26
D.37/45	6.01	7.06	7.86	11.85	12.77	13.71
Means	6.00	6.82	7.35	12.49	13.09	13.18
Signif. Diff. ..	1.31	1.31	1.31	1.34	1.34	1.34

The results of this experiment differ from those of the previous one in two main respects. Firstly, there is a general increase in yield from the second application of 71 lbs of nitrogen per acre, and secondly, there is an increase in Pol. % Cane from the first addition of nitrogen followed by a decrease from the second application except in the case of D.37/45.

In spite of the uniformity in the general trends regarding the response to nitrogen application, the plot to plot variation was relatively high and statistically significant responses to nitrogen were only obtained at the 141 lbs nitrogen per acre rate in the case of B.4098 and D.37/45, although the other varieties only just fell short of significance at this rate of application.

In respect to inter-variety differences, B. 41227 outyielded both B.4098 and B.4362 by statistically significant amounts at the N_0 and N_3 level, but at the N_6 level only B.4362 was out-yielded. B.37161 significantly outyielded B.4098 at the N_0 level.

In this experiment the yield curve for D.37/45 is again almost linear.

Unlike the previous experiment, the application of the first 71 lbs of nitrogen per acre increases the Pol. % Cane. In no case is the increase significant however. Except for D.37/45, the Pol. % Cane at the N_6 level is below that of the N_3 level of application. In the case of D.37/45 however, the Pol. % Cane at the N_6 level of nitrogen is significantly higher than the Pol. % Cane at the N_0 level.

SUMMARY.

(i) *N-P-K Experiments.*

In general, the data from the N-P-K experiments reaped in 1956, confirm earlier findings, which are summarised as follows.

Nutrient deficiencies as Indicated by Leaf and Juice Analyses.

Plant analysis methods afford a useful means of determining the nutrient requirements of the sugar cane in British Guiana. While present methods of foliar diagnosis are not perfect and certain modifications of them and in the interpretation of the results may be desirable when more data are available, they represent a considerable step forward in determining and controlling fertilizer programmes.

Further investigations are required to determine the most suitable tissue or combination of tissues for analysis while the interpretation of the analyses for the various nutrients requires that consideration be given to the effects which are exerted on such data by the factors, soil type, weather conditions, crop cycle, and cane variety.

Juice analysis is shewn to have good possibilities in diagnosing nutrient deficiencies of phosphate and possibly other nutrients as well although it requires that varietal differences be recognised. For phosphate, it has the advantage over leaf analysis that there are greater variations in the level of this nutrient with different treatments than is the case with the leaf analyses. On the other hand, there are also considerably greater differences as between variety and variety[4] which would probably necessitate having different critical values for the various nutrients for each variety, although conceivably a number of varieties might have similar critical values.

From the series of N-P-K experiments described in recent Bulletins, the correlations between the level of nitrogen in the leaf at the sampling ages used and the yield of 96° sugar are high and positive. Leaf and juice analyses for phosphate also afford a satisfactory means of determining the phosphate requirements of the crop. On the other hand, in these experiments statistically significant correlations between the level of potash in the leaf and the response to this nutrient have not been obtained. This is contrary to experience elsewhere, where potash is usually the nutrient for which the best correlations between leaf content and yields, or response to applications of the nutrient, are to be expected. From these experiments it appears that the response to potash is related more to relative uptake than to the actual K_2O % leaf dry matter, the linear correlation in this case being statistically significant at the .05 level. A brief review of the major conclusions arising from these studies follows.

Nitrogen. The nitrogen percent. leaf dry matter affords good evidence of the nitrogen status of the cane plant and of the soil in which the crop is growing.

The critical nitrogen level in the leaf at the sampling ages used, appears to depend on soil conditions, weather conditions, and possibly on the cane variety grown and the cycle age of the crop.

The effect of *weather* conditions in determining natural levels of available nitrogen in local soils, appears from the leaf analyses and the yields of the "no nitrogen" plots of all three continuation experiments to be greater than was anticipated. Similar effects of weather on the availability of phosphate and potash are also to be observed from these series of experiments.

The effect of *soil type* on the relationship between the nitrogen content of the leaf dry matter and the rate of application of nitrogen has been noted previously[2]. In this connection, it appears that at the sampling ages used in these studies, the critical nitrogen level is higher in the light soils (*e.g.* Blairmont loams) than in the heavy clays. It also appears desirable on such soils to determine the adequacy of the nitrogen supplied at a latter stage in the growth by a second series of leaf analyses, since, while higher nitrogen levels of the leaf are obtained on light soils following the application of nitrogen, the leaf nitrogen contents also fall more rapidly thereafter and a deficiency may appear at five to six months age in spite of an adequate level being shewn in the leaves when sampled at the usual times.[4] With the heavier soils, the uptake of applied nitrogen appears to be more uniform and where a satisfactory level is found at the sampling ages used, a satisfactory level in the leaf at later stages of growth is usual. In consequence, a single analysis at the appropriate age will usually be found to be satisfactory in the case of the heavy clays.

The pegassy soils appear to be intermediate between the loams and heavy clays in respect to the uptake and the supply of nitrogen to cane grown on them. On the application of nitrogen to these soils, high concentrations of the nutrient in the leaf are usual at the sampling ages used, while, owing either to the high availability of the nitrogen in the organic matter present, or to better conditions for nitrification in such soils, or both, the leaf contents of nitrogen tend to be well maintained during the later stages of growth of the crop.

The *cycle age* of the crop appears also to have an influence and the optimum nitrogen content at any given age appears to be somewhat lower with increasing ratoon age. In fact, the optimum level for *plants* and *first ratoons* is frequently not realised in second and older ratoons with an application of 141 lbs. nitrogen per acre at which rate there is usually a considerable flattening of the yield curve. Taking the data as a whole the following mean data for the experiments on the *heavy clays* is illustrative of the point. The data for B.41227 in the Variety-Fertilizer experiments reaped to date are also included here for completeness.

		96° Sugar per Acre.			Nitrogen % Leaf.		
		N_0	N_3	N_6	N_0	N_3	N_6
Plants.	(4)	5.40	6.05	6.11	1.95	2.17	2.27
1 R.	(8)	3.37	4.64	5.12	1.74	2.08	2.21
2 R.	(5)	3.25	3.88	4.28	1.54	1.96	2.03

In these studies, a high correlation (statistically significant at the .01 level) is obtained between the nitrogen content of the leaf at the selected sampling ages and the yield of 96° sugar per acre, and also between the relative increase in leaf nitrogen and the relative yield of 96° sugar.

There is also a high positive correlation between the rate of application of nitrogen and the nitrogen content of the leaf. On the other hand, applications of sulphate of ammonia significantly reduce the phosphate content of the leaf and juice.

Applications of nitrogen increase the magnesium content of the leaf, while liming also tends to increase the nitrogen content during the later stages of growth of the crop.[4]

There is no residual effect from applications of nitrogen from one crop to another.

Applications of nitrogen affect Pol. % Cane and Juice Purity variously. Where nitrogen is very deficient, applications of the nutrient increase both Pol. % Cane and Juice Purity. Where this nutrient is adequate or approaching adequacy, both the Pol. % Cane and the Juice Purity tend to decrease. These effects are also dependent upon climatic conditions, more particularly on the rainfall.

Some of the above relationships are illustrated graphically in Figure II.

Phosphate. Applications of calcium superphosphate to soils result in statistically significant increases in the phosphate contents of both leaf and juice. However, the recovery by the plant of such added phosphates is low and variable. In general, the major factors affecting the absorption of applied phosphate are: the nature of the soil, its tilth, the rate of application of sulphate of ammonia, and the weather conditions prevailing during the early stages of growth of the crop.

While laboratory studies[5] have indicated that there is a high degree of phosphate fixation in the heavy clay soils of British Guiana (60 to 90% fixed) it is not certain whether these laboratory studies duplicate field conditions in practice. It is certainly the case that only a relatively small percentage (from 2 to 10%) of the applied phosphate is recovered in the juice of the cane in the first crop following its application, and fixation by the soil may well be responsible for this. On the other hand, the experiments on the residual benefits from applied fertilizers indicate that the uptake of fertilizer phosphate in the second year following its application, is, in some soils, approximately the same as in the first. Whether this state of affairs on such soils will continue remains to be proved.

In six experiments (all on frontland clays) to test the residual response to phosphate, the increased phosphate uptake in lbs. P_2O_5 in juice per acre from the N_6P_6 plots over the N_6 plots is presented in Table X.

FIGURE II.

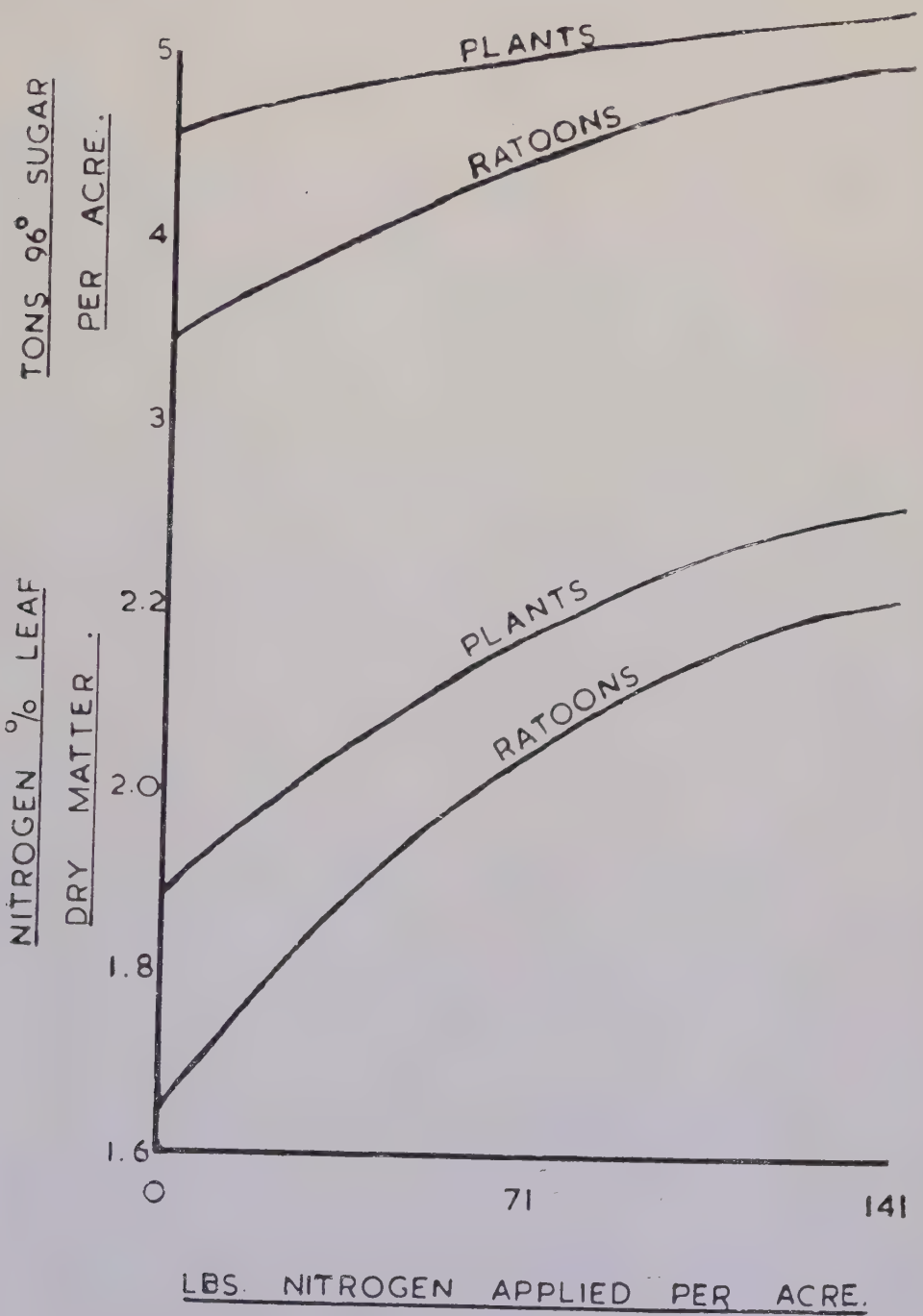

TONS 96° SUGAR PER ACRE.
5
4
3
PLANTS
RATOONS
NITROGEN % LEAF DRY MATTER.
2.2
2.0
1.8
1.6
PLANTS
RATOONS
0
71
141
LBS. NITROGEN APPLIED PER ACRE.

TABLE X.

Increase in Lbs. P_2O_5 in Juice per acre from the application of 125 lbs. P_2O_5 per Acre.

Experiment.	19 0.	20 0.B.	14 V.	9 R.P.	18 M.	2 F.
In crop following application of phosphate.	11.2	10.7	4.0	3.8	3.4	2.8
Following year, (i.e. residual).	12.9	6.2	4.8	1.7	1.0	1.6

These results demonstrate a tendency for the uptake of phosphate from residual fertilizer applications to be similar to that of the year of application where a relatively good recovery is obtained in the first crop and to decrease where the recovery was correspondingly poor. If these experiments are representative of the results obtainable on frontland clays, it would appear that even within the same soil type there may be considerable differences in the degree of phosphate fixation by the soil. On the other hand, the possibility cannot be excluded that these results reflect: (i), external conditions peculiar to the particular area (e.g. drainage conditions); or, (ii), certain chemical features not necessarily representative of the soil type, (e.g. differences in the salinity of the soils); or, (iii), the tilth conditions at the particular site.

The data from the three continuation experiments, indicate that the continued application of phosphate slowly builds up the content of "plant-available" phosphate in the soil. However, there is need for more data in these connections to determine the most economical method of application of phosphates to the various soil types, i.e. whether annual applications, or a single application to the plant cane crop are preferable.

Applications of sulphate of ammonia depress the uptake of phoshate which is reflected in both leaf and juice analysis—more particularly the latter. A comparison of P_2O_5 % leaf dry matter for the N_0 and N_6 treatments on clay soils, gives the means as .496 and .462% respectively.* In the juice, the corresponding percentages of P_2O_5 are .031 and .018%. The differences are statistically significant in each case.

Where the available phosphate content of the soil is low, applications of sulphate of ammonia by still further reducing its uptake by the plant may result in such applications actually depressing yields. While such instances are rare in British Guiana, field 18 M., Blairmont Estate, affords an example [1].

Under local conditions, leaf analysis affords a means of determining the phosphate requirements of the cane plant, the relationship between the P_2O_5 content of the leaf and the response to applications of 124 lbs. P_2O_5 per acre being statistically significant although the degree of correlation is not so high as with nitrogen. One reason for this is (as has been mentioned in the foregoing), that very variable percentages of applied phosphate are taken up by the plant and in some cases the amount absorbed may not be sufficient to satisfy the deficiency and produce a response that is statistically significant. In ad-

* The phosphate uptake as determined by leaf analysis was not typical in the case of the experiment on the pegassy clay and has for this reason been omitted in arriving at the averages. In the juice however, the phosphate uptake followed the normal pattern.

dition, two indirect effects which arise from applying calcium superphosphate to local soils also contribute to the lower degree of correlation between the level of leaf phosphate and the response to phosphates. These are, firstly, the effect of phosphate in increasing the uptake of potash, an effect which is highly significant statistically and which can produce an increase in yield where phosphate may be adequate and potash very deficient; and secondly, its effect in increasing the uptake of calcium which can also produce an increase in yield in cases where phosphate is adequate but calcium very deficient.

The phosphate content of the juice at time of reaping is also a good index of the phosphate status of the cane and of the soil on which the crop is grown, as has been shewn previously[4]. For the series of experiments under consideration, the correlation between this index and the relative yield increase from phosphate is higher than that for leaf phosphate.

It should be noted that in cases of severe phosphate deficiency, the increased uptake of comparatively small quantities of phosphate by the plant produce relatively large yield responses, indicating a high efficiency in the use of such additional supplies by the cane plant. In fact, the lbs. P_2O_5 in juice per acre is the best measure of the adequacy or otherwise of the phosphate supplies since in many cases the effect of such an increase may not be reflected in the percentage composition of the leaf or juice owing to its being spread out over a larger tonnage of cane.

From these data, statistically significant responses to applications of phosphate may be expected where the P_2O_5 % leaf dry matter is 0.45% or below. Yield responses are also obtained where the P_2O_5 % leaf is within the range 0.45 to 0.50%, but the responses within this range are not usually statistically significant.

In the case of juice analysis, a statistically significant response to phosphate may be anticipated where the P_2O_5 % juice is below 0.015% for the variety B.41227.* Yield increases are also obtained where the P_2O_5 % juice in this variety is from .015% to .018% but these are not usually statistically significant.

Yield responses to applications of calcium superphosphate at contents above 0.50, P_2O_5 % leaf, and of .018, P_2O_5 % juice, are attributable to indirect effects such as have already been considered.

Potash. The potash content of the cane leaf is increased by applications of potash and also by applications of phosphate by amounts that are statistically significant. Liming also generally increases the level of potash in the cane leaf.

Although in 18 out of the 20 N-P-K experiments the application of potash has resulted in an increase in the yield of 96° sugar per acre, (average increase = 6.7%), there is no statistically significant correlation between the yield responses to potash and the level of potash in the leaf. However, there is a significant correlation (significant at the .05 level) between the relative

* The critical level of P_2O_5% juice will vary with cane variety.

increase in yield from 215 lbs. K_2O per acre and the relative increase in leaf potash obtained from such applications. The failure to obtain a correlation between the response to potash and its level in the leaf is an unexpected result in view of the fact that in other countries potassium is perhaps the nutrient, the status of which can be most reliably diagnosed in the sugar cane by means of foliar analysis.

Evans[7] has noted cases in British Guiana where a number of trials have given responses to potash although potash levels in the leaf are regarded as adequate. The responses in these cases is attributed to phosphate deficiency, the application of potash resulting in a better phosphate uptake to which the response was due. He also refers to an instance where although leaf potash was low, no response to this nutrient was obtained owing to potash applications depressing the uptake of calcium and magnesium which were both marginal. It is possible that similar interactions are responsible for the failure to obtain from these series of experiments, the correlations which would normally be expected. Unfortunately, owing to pressure of other work it has not been possible to determine by leaf analysis whether the calcium and magnesium contents of the leaf have been depressed by the potash applications to an extent which would produce limiting values for these nutrients. In these experiments, applications of potash have resulted in many cases in a decrease in the level of phosphate in the leaf and it is likely that the gain which may have been anticipated from potash has been reduced owing to the concurrent reduction in the phosphate level of the leaf. This effect would reduce the chances of obtaining statistically significant correlations from applications of potash unless phosphate was also applied at the same time. In this connection it should be noted that taking the experiments as a whole, the responses from applications of phosphate and potash in the N_6 P_6 K_4 treatments are approximately additive.

In some plant species, sodium increases the efficiency of utilisation of potassium and since exchangeable sodium is relatively high in many local soils it was thought desirable to ascertain whether the failure to obtain correlations between the potash level in the leaf and responses to potash applications was due to sodium acting as described above, or actually serving to make up for a potassium deficiency.

In these experiments, the Na_2O contents of the leaves varied from 4 to 14% of that of the potash, the average Na_2O % leaf dry matter in the N_6 treatments being .10% as compared with an average K_2O content of 1.50%.

A statistical analysis of the data shewed that there was no correlation between the Na_2O content of the leaf and the degree of response to potash and there is therefore no evidence from these series of experiments that sodium in any way enhances the utilisation of potash by the sugar cane plant.

The increases in yield of sugar per acre from the application of potash have been due to both an increase in the tonnage of cane and in the Pol. % Cane. In fact, in these experiments the increase in the Pol. % Cane from applications of potash is highly significant statistically, although it has not been possible to shew that the increase in the Pol. content of the cane is correlated with the potash level in the leaf.

For advisory purposes, the tentative critical value of 1.40 K_2O % leaf dry matter previously suggested[4], is retained until more data are available.

(ii). *Liming Experiments.*

In the four experiments reaped as plants in 1956, lime applications have in most cases resulted in increased yields which however, have not been statistically significant.

Liming has in most cases given increases in the phosphate content of the leaves and juice and also in the potash content of the leaf thereby confirming previous results[4].

(iii). *Relative Values of Various Nitrogen and Phosphate Fertilizers.*

In the plant cane experiment reaped in 1956 to compare the relative values of urea, ammonium chloride, ammonium nitrate, ammonium phosphate and ammonium sulphate as sources of nitrogen for the sugar cane under local conditions, there were no significant differences between these fertilizers. The experiment is being continued as first ratoons.

An experiment to compare similarly the phosphatic fertilizers: single calcium superphosphate, di-calcium phosphate, basic slag, ground rock phosphate and Reno rock phosphate, gave small yield responses to phosphate which were not however statistically significant in the plant crop as the experiment site was not as deficient in this plant nutrient as was anticipated.

The availability of the fertilizer phosphate was assessed by determining the P_2O_5 % juice and the lbs. P_2O_5 in juice per acre. These analyses suggested that the foregoing phosphatic fertilizers are equally satisfactory sources of phosphate on this soil type.

(iv) *Variety Fertilizer-Experiments.*

The results obtained from the plant cane crop in the two experiments designed to test whether different cane varieties possess different nitrogen requirements, indicate that cane varieties are likely to respond differently relative to each other at different fertilizer levels and under different climatic and soil conditions. However, the evidence obtained in the plant cane crop is by no means clear-cut and further data are required before this subject can be discussed profitably.

The most definite conclusions from these plant cane results confirm those obtained from experiments described in previous Bulletins and the earlier sections of this Bulletin, as follows:

(i). B.41227 is the heaviest yielding of the five varieties used in these experiments but its position in this respect as plants is challenged by D.37/45 at the higher rate of application of nitrogen.

(ii). Apart from the influence of varying levels of available nitrogen, climatic conditions and the degree and time of arrowing of the various varieties as well as the age at which they are reaped also exert an influence on the yields obtained.

(iii). The optimum rates of application of nitrogen frequently appear to be higher for experiments reaped within the period 1952-1956, than was the case with fertilizer experiments reaped prior to 1952. It is not known whether this is due to the higher average annual rainfall of recent years or to the fact that present-day varieties possess a higher nitrogen requirement, or whether both factors operate.

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TABLE I (A).—Weighted Mean Commercial Yields in East Demerara, 1956.

Variety.	Acres Harvested.	Crusher Juice. Pol. %	Crusher Juice. Purity.	Tons 96° Sugar per Acre.*
		Plant Canes.		
		100 Acres and over.		
B. 41227	890.4	13.73	82.99	4.07
B. 37161	1,648.9	13.62	82.31	4.03
B. 47258	125.5	12.43	79.84	4.20
B. 47225	695.3	14.14	83.58	3.94
Pindar	551.5	14.32	83.91	3.90
B. 4373	120.2	14.86	83.84	3.87
B. 40102	118.9	14.06	81.40	3.84
B. 47379	222.5	12.75	80.91	3.18
		Under 100 Acres.		
Trojan	1.7	16.22	86.82	4.76
N.C.O. 330	1.8	14.08	83.94	4.56
B. 48372	4.5	13.40	85.35	4.45
M. 112/34	7.0	12.53	81.16	4.19
D. 37/45	37.9	11.97	79.03	4.01
N.C.O. 310	28.0	14.90	84.54	4.00
B. 46378	19.2	15.41	84.21	3.91
Frs	29.6	14.54	83.54	3.91
Comus	4.8	15.11	84.55	3.79
M. 213/40	4.5	10.27	74.25	3.78
M. 134/32	4.3	15.20	83.81	3.74
Mixed	7.6	14.36	84.09	3.65
P.O.J. 3016	3.6	16.02	85.43	3.67
B. 43253	4.5	15.54	84.93	3.33
H. 37—1933	7.7	13.35	82.41	3.16
P.O.J. 2967	21.3	14.82	83.25	3.02
Co. 413	.7	15.85	82.98	3.00
M. 423/41	2.4	11.98	75.24	2.54
B. 4362	52.1	14.20	82.45	2.21
Pepecuca	.5	15.85	82.98	2.00
		First Ratoons.		
		100 Acres and over.		
B. 47225	232.8	14.69	83.96	3.94
B. 37161	1,784.7	14.25	83.36	3.93
B. 41227	1,256.2	13.97	82.93	3.89
B. 4362	777.9	14.24	82.91	3.56
		Under 100 Acres.		
D. 37/45	9.3	13.98	82.60	4.52
Comus	.7	14.33	83.61	4.43
B. 47258	8.7	12.24	80.31	4.36
B. 4373	18.5	13.82	83.63	3.94
B. 4098	23.0	13.33	82.75	3.87
B. 46378	20.7	13.88	82.84	3.82
Co. 419	20.7	14.45	83.22	3.77
B. 40105	94.1	14.62	82.91	3.38
Pindar	65.3	14.16	84.04	3.25
Mixed	8.2	14.07	82.89	3.17
B. 47379	23.5	13.11	81.83	3.07
		Second Ratoons.		
		100 Acres and over.		
B. 41227	1,317.9	14.66	83.71	3.42
B. 37161	551.3	14.68	82.55	3.40
B. 4098	393.5	14.56	83.66	3.38
B. 4362	278.9	14.65	83.52	3.30
B. 34104	127.1	14.57	82.60	3.22
		Under 100 Acres.		
B. 40105	11.5	14.91	83.03	3.65
D. 37/45	15.5	14.28	83.19	3.43
B. 47225	10.4	14.93	84.21	3.35
Co. 419	59.5	13.87	81.97	3.03
B. 43413	20.0	13.67	80.98	2.77
Mixed	3.5	14.20	83.70	2.57
B. 44341	15.3	13.85	81.23	2.01
		Third Ratoons.		
		100 Acres and over.		
B. 41227	775.0	14.52	83.43	3.13
B. 40105	446.6	14.30	83.92	3.06
B. 37161	1,160.7	14.65	84.14	3.05
B. 34104	553.7	14.90	84.26	2.54
		Under 100 Acres.		
Mixed	22.7	15.88	84.95	3.75
Co. 419	39.0	13.65	81.40	3.46
B. 4098	97.5	14.43	83.85	3.04
D. 62/43	18.3	14.08	82.52	3.04
D. 158/41	26.0	13.79	82.32	3.00
B. 4362	59.5	14.47	83.76	2.60
		Old Ratoons.		
		100 Acres and over.		
B. 37161	109.7	13.43	82.78	3.41
		Under 100 Acres.		
Co. 419	9.2	13.86	83.51	3.70
B. 40105	30.5	13.10	81.84	3.05
B. 41227	92.6	13.33	81.40	2.93

*Undue importance should not be attached to the order of merit when only a small acreage has been harvested.

TABLE I (B).—Weighted Mean Commercial Yields in West Demerara, 1956.

Variety.	Acres Harvested.	Crusher Juice. Pol. %	Crusher Juice. Purity.	Tons 96° Sugar per Acre*.
		Plant 100 Acres Canes. and over.		
B. 4098	139.2	13.80	83.78	5.00
B. 47258	110.5	14.28	83.74	4.72
B. 41227	539.5	14.88	85.32	4.58
B. 37161	1,585.5	14.66	84.86	4.44
B. 47225	693.6	14.76	84.91	3.99
		Under 100 Acres.		
D. 37/45	3.3	14.56	84.65	5.09
B. 4744	3.3	14.56	84.65	4.79
Trojan	11.5	16.22	86.82	4.76
B. 48372	22.3	13.74	81.25	4.55
B. 47379	67.8	14.13	83.03	4.50
H. 37—1933	3.8	14.82	85.27	4.42
Pindar	58.3	16.11	86.33	4.36
B. 4373	17.3	14.47	82.21	4.20
B. 4362	35.5	14.47	82.27	4.17
B. 46378	42.0	14.14	83.20	4.05
Mixed	15.7	13.98	83.83	3.78
N.C.O. 310	19.1	15.30	83.80	2.77
H. 32—1063	.3	15.37	84.70	2.00
		First 100 Acres Ratoons. and over.		
B. 4098	156.3	15.39	85.84	4.45
B. 4362	385.1	15.22	84.72	4.08
B. 37161	1,400.7	14.88	84.66	4.02
B. 41227	259.5	14.82	84.09	3.99
B. 47225	357.3	15.04	84.34	3.79
		Under 100 Acres.		
P.O.J. 3016	1.3	15.43	86.20	5.92
B. 4744	12.0	14.21	85.57	5.17
Eros	5.0	15.75	86.19	5.06
B. 47258	12.5	15.10	85.12	4.05
B. 46378	16.0	14.85	84.89	3.76
B. 47379	1.2	15.97	85.84	3.33
Mixed	46.8	14.79	84.08	3.22
P.O.J. 2967	3.8	15.66	84.02	2.84
M. 134/32	11.8	14.79	84.58	2.68
M. 112/34	6.5	14.29	83.08	2.66
Comus	1.2	14.80	84.00	1.42
		Second 100 Acres Ratoons. and over.		
B. 4362	461.4	15.43	85.20	4.00
B. 4098	236.0	15.97	86.46	3.89
B. 41227	510.2	14.97	84.96	3.69
B. 37161	988.5	14.39	83.94	3.50
		Under 100 Acres.		
B. 46376	.5	15.82	86.54	3.40
Mixed	41.7	15.15	84.76	3.40
B. 47225	66.3	15.28	84.42	3.10
Pindar	.2	14.60	83.01	2.50
D. 37/45	25.1	15.44	85.41	2.33
B. 47258	.5	14.08	82.00	2.00
		Third 100 Acres Ratoons. and over.		
B. 41227	928.4	14.94	84.47	3.68
B. 37161	863.0	14.84	84.99	3.60
B. 4098	238.8	15.41	85.33	3.23
		Under 100 Acres.		
B. 46378	5.0	15.23	84.00	3.80
B. 43253	10.8	15.18	84.15	3.68
Mixed	10.0	15.43	84.35	3.44
B. 4362	40.6	15.09	85.44	3.42
D. 62/43	41.4	15.03	85.55	3.24
B. 47225	42.0	14.82	83.68	3.11
Co. 419	10.3	14.60	83.01	3.01
		Old 100 Acres Ratoons. and over.		
B. 41227	302.3	14.77	85.35	3.48
B. 37161	247.6	15.18	85.66	3.16
		Under 100 Acres.		
B. 34104	17.0	15.20	86.70	3.00
B. 4098	12.8	13.99	82.99	2.92
D. 142/41	44.5	14.86	84.48	2.20

* Undue importance should not be attached to the order of merit when only a small acreage has been harvested.

TABLE 1 (C).—Weighted Mean Commercial Yields along Demerara River Banks, 1956.

Variety.	Acres Harvested.	Crusher Juice. Pol. %	Purity.	Tons 96° Sugar per Acre.*
		Plant Canes. 100 Acres and Over.		
B. [illegible]	175.8	15.27	84.37	4.06
B. [illegible]	418.6	14.61	84.02	4.46
B. [illegible]	144.4	15.67	85.92	4.47
B. [illegible]	236.8	15.15	84.59	4.26
B. 3[illegible]	2,937.0	14.46	83.83	4.23
		Under 100 Acres.		
B. 4[illegible]	2.9	14.35	83.24	5.16
D. 142/41	3.0	14.28	83.93	4.95
B. 4[illegible]	95.5	14.72	83.30	4.82
Pindar	57.7	15.81	87.52	4.35
Mixed	12.9	13.78	82.43	4.36
Co. 419	27.0	14.35	83.24	4.16
B. 4744	66.0	13.73	82.79	3.91
N.C.O. 310	.7	14.09	82.85	1.43
M. 423/41	.4	15.68	84.99	1.45
B. 47379	3.5	12.51	80.20	.87
		First Ratoons. 100 Acres and Over.		
B. 41227	696.4	14.98	84.59	4.20
B. 4098	471.3	15.84	86.33	4.09
D. 37/45	126.5	14.52	84.93	4.02
B. 37161	2,157.4	15.00	83.39	4.01
B. 47225	116.9	15.03	85.73	4.01
B. 4362	276.5	15.64	84.54	3.79
		Under 100 Acres.		
B. 47147	.1	15.40	85.35	1.[illegible]
B. 47419	1.6	15.40	85.[illegible]	[illegible]
B. 47[illegible]	26.7	15.44	85.[illegible]	[illegible]
B. 4373	.3	14.19	81.35	[illegible]
Pindar	1.4	16.75	[illegible]	[illegible]
Comus	.7	16.40	[illegible]	[illegible]
Mixed	3.7	14.52	[illegible]	[illegible]
Eros	3.1	15.84	87.51	[illegible]
Co. 419	.5	15.40	85.35	[illegible]
B. 46378	65.0	14.23	85.26	[illegible]
D. 142/41	35.3	14.06	82.48	[illegible]
D. 158/41	22.7	13.64	81.07	3.46
D. 14/34	10.0	14.21	82.60	2.73
		Second Ratoons. 100 Acres and over.		
Co. 419	171.5	15.13	84.06	4.[illegible]
B. 41227	1,[illegible]4	15.10	84.80	[illegible]
B. 37161	1,[illegible]6	14.38	84.55	[illegible]
B. 4362	416.[illegible]	15.13	84.41	3.17
B. 4098	377.3	15.34	85.13	3.15
		Under 100 Acres.		
B. 4373	.3	15.63	87.17	6.[illegible]
B. 47419	.6	15.12	86.06	5.17
B. [illegible]38	2.1	14.81	85.39	4.10
Mixed	3.5	14.68	84.54	4.[illegible]
B. 46378	31.8	15.48	84.91	3.47
D. 142/41	56.9	14.35	83.04	3.46
D. 158/41	19.0	15.96	85.89	3.43
B. 34104	95.5	15.25	84.98	3.11
D. 37/45	59.9	14.99	84.07	3.04
B. 47225	12.9	14.98	85.15	2.70
		Third Ratoons. 100 Acres and Over.		
Co. 419	231.8	14.36	83.29	3.60
B. 41227	1,169.8	14.79	84.58	3.47
B. 37161	924.6	15.26	84.86	3.37
		Under 100 Acres.		
D. 49/41	13.5	14.10	83.22	4.16
Mixed	16.0	14.25	81.90	3.84
B. 4098	69.3	16.10	86.52	3.09
B. 4362	70.5	15.03	84.68	3.09
D. 142/41	52.8	14.28	83.74	3.03
D. 62/43	3.0	14.61	84.73	3.00
B. 34104	32.1	14.27	84.15	2.85
D. 37/45	5.0	14.20	83.50	2.84
D. 14/34	8.2	14.09	84.80	2.80
Diamond 10	10.5	15.87	85.10	2.80
D. 158/41	15.6	14.65	83.09	2.23
B. 40105	.5	15.36	85.23	2.04
		Old Ratoons. 100 Acres and Over.		
Co. 419	155.3	15.39	85.33	3.99
B. 41227	765.1	15.28	84.96	3.80
B. 37161	1,130.0	14.34	83.76	3.25
B. 34104	287.2	14.46	84.11	2.94
		Under 100 Acres.		
D. 62/43	5.5	14.19	83.96	4.24
B. 4098	30.5	14.30	82.90	3.48
B. 4362	52.5	15.49	86.76	3.45
D. 142/41	19.8	14.08	82.38	3.31
D. 14/34	31.0	15.63	86.30	2.90

* Undue importance should not be attached to the order of merit when only a small acreage has been harvested.

TABLE I (D).—Weighted Mean Commercial Yields in Berbice, 1956.

Variety.	Acres Harvested.	Crusher Juice. Pol. %	Crusher Juice. Purity.	Tons 96° Sugar per Acre.*
		Plant 100 Acres	*Canes. and over.*	
B. 37161	3,488.8	14.38	82.88	4.17
B. 41227	1,444.5	13.74	81.81	3.90
B. 47225	832.2	14.19	83.04	3.90
Pindar	449.9	13.64	83.18	3.89
B. 4098	148.9	13.68	82.19	3.28
		Under 100	*Acres.*	
B. 4362	1.2	14.46	82.67	5.00
B. 47258	53.1	13.61	80.05	4.28
B. 45137	2.2	14.94	82.06	4.23
B. 4373	21.6	14.91	83.67	4.10
Mixed	49.8	13.76	82.44	3.97
B. 46378	30.7	16.66	85.34	3.91
B. 43253	10.1	14.04	81.17	3.89
Co. 419	37.6	13.25	82.30	3.81
D. 158/41	6.3	13.61	80.77	3.65
B. 46218	4.5	14.26	82.43	3.58
M. 134/32	6.0	14.19	81.21	3.55
P.R. 1000	2.2	14.84	81.90	3.36
Eros	51.2	13.00	80.77	2.87
H. 37-1933	20.8	14.51	82.20	2,85
M. 112/34	4.9	15.52	83.08	2166
Comus	.6	16.61	84.70	2.33
N.C.O. 310	3.7	15.41	84.20	2.24
		First 100 Acres	*Ratoons. and over.*	
B. 41227	2,017.3	14.00	81.96	3.92
B. 37161	3,102.9	13.94	82.09	3.91
B. 47225	180.9	14.13	81.98	3.80
B. 4098	628.8	14.79	83.13	3.66
B. 4362	292.4	14.11	81.71	3.10
		Under 100	*Acres.*	
D. 19/46	2.0	11.86	73.70	6.60
B. 4733	1.1	13.88	82.90	4.64
D. 158/41	38.0	13.39	81.55	4.47
B. 40105	7.1	13.76	80.28	4.23
B. 46378	33.5	14.82	81.51	4.09
D. 37/45	8.8	12.72	82.60	3.81
Eros	5.7	15.14	84.00	3.78
B. 4373	9.0	14.33	82.83	3.66
B. 4724	2.0	13.44	78.10	3.60
Mixed	48.3	14.90	83.13	3.59
B. 43413	1.7	15.62	83.30	3.53
Pindar	45.6	13.70	81.61	3.34
D. 62/43	60.2	12.82	81.63	3.18
D. 18/46	2.0	12.99	75.70	1.55
P.O.J. 3016	.6	13.92	82.40	1.17
Comus	.3	14.96	82.30	1.00
P.O.J. 2967	1.0	16.50	78.90	.80
		Second 100 Acres	*Ratoons. and over.*	
B. 37161	1,224.5	14.33	82.63	3.55
B. 41227	3,616.6	13.89	82.04	3.47
D. 62/43	120.7	14.43	82.70	3.38
B. 4098	1,545.2	14.12	82.66	3.22
D. 37/45	102.6	13.10	80.85	2.95
B. 34104	334.3	13.70	82.82	2.50
		Under 100	*Acres.*	
B. 40105	3.8	14.68	82.94	4.21
D. 158/41	62.1	14.15	82.57	3.88
B. 46378	3.6	13.39	80.26	3.47
Mixed	33.0	13.77	81.34	3.27
B. 47225	11.2	13.32	81.24	3.11
B. 4362	21.9	12.95	79.06	3.10
Pindar	7.6	13.60	83.80	2.67
D. 14/34	24.9	13.46	82.15	2.42
		Third 100 Acres	*Ratoons. and over.*	
Co. 419	151.2	12.76	79.30	3.39
B. 41227	1,922.7	13.83	81.70	3.34
B. 4098	1,545.2	14.19	82.37	3.22
B. 37161	1,287.6	14.30	83.21	3.21
B. 34104	201.2	15.00	83.70	2.71
		Under 100	*Acres.*	
Mixed	18.3	14.12	83.59	3.67
D. 62/43	4.7	13.78	82.00	3.62
D. 37/45	10.5	14.26	83.03	3.38
B. 4362	4.7	14.46	84.09	2.81
B. 46378	.9	13.71	81.71	2.78
D. 158/41	44.7	13.53	79.68	2.76
D. 14/34	43.5	14.92	86.46	2.24
B. 40105	.6	13.94	83.98	1.67
		Old 100 Acres	*Ratoons. and over.*	
B. 41227	895.4	14.00	82.35	3.04
B. 34104	208.8	14.98	82.91	2.98
B. 37161	624.0	13.95	82.24	2.97
		Under 100	*Acres.*	
Mixed	12.2	13.93	80.64	3.99
B. 4098	64.5	14.01	81.97	2.88
Co. 419	57.4	13.54	80.32	2.33
D. 142/41	51.2	13.25	80.50	2.23
B. 47225	2.3	13.61	80.78	2.22
D. 62/43	4.0	13.51	80.65	1.73
P.O.J. 2878	2.7	13.02	82.90	1.22

* Undue importance should not be attached to the order of merit when only a small acreage has been harvested.

TABLE I (E).— **Weighted Mean Commercial Yields under Estate Conditions, 1956.**

Variety.	Acres Harvested.	Crusher Juice. Pol. %	Purity.	Tons 96° Sugar Per Acre*
		Plant Canes. 100 Acres and over.		
B. [illegible]	433.5	14.00	82.39	[illegible]
B. [illegible]	267.7	15.37	84.28	[illegible]
B. [illegible]	3,362.0	14.24	83.54	[illegible]
B. [illegible]	9,060.2	14.28	83.47	[illegible]
B. [illegible]	288.1	13.74	82.98	[illegible]
B. [illegible]	2,457.6	14.56	84.03	[illegible]
B. [illegible]	184.7	14.46	82.67	[illegible]
B. [illegible]	167.1	14.75	83.24	[illegible]
P. [illegible]	1,087.4	14.97	85.24	[illegible]
B. [illegible]	118.9	14.00	81.40	[illegible]
B. 47379	293.8	13.13	81.38	[illegible]
		Under 100 Acres		
D. 142/41	3.0	14.26	83.99	[illegible]
B. 4744	3.3	14.56	84.65	[illegible]
Trojan	13.2	15.72	86.82	[illegible]
N.C.O. 330	1.8	14.68	83.94	[illegible]
B. 48372	26.8	13.57	83.30	[illegible]
B. 45137	2.2	14.94	82.06	[illegible]
D. 37/45	41.2	13.26	81.84	[illegible]
Co. 419	64.6	13.80	82.76	[illegible]
Mixed	86.0	13.97	83.20	[illegible]
M. 112/34	11.9	14.02	82.33	3.94
B. 47419	66.0	13.13	82.79	3.91
M. 213/40	4.5	10.27	74.25	3.78
B. [illegible]	14.6	14.79	83.05	[illegible]
P.O.J. 3016	3.6	16.02	85.43	[illegible]
D. 158/41	6.3	13.61	80.77	[illegible]
Comus	5.4	15.86	84.62	[illegible]
M. 134/32	10.3	14.69	82.51	[illegible]
B. 46218	4.5	14.26	82.43	[illegible]
Eros	30.8	13.77	82.15	[illegible]
N.C.O. 310	51.5	14.92	83.85	[illegible]
P.R. 100	2.2	14.84	81.90	[illegible]
H. 37-1[illegible]	32.3	14.23	83.29	[illegible]
P.O.J. [illegible]	21.3	14.82	83.25	[illegible]
Co. 419	.7	15.35	82.98	[illegible]
M. 422/41	3.1	13.83	80.12	[illegible]
H. 32-1[illegible]	.3	15.37	84.70	[illegible]
Pemeuca	.5	15.85	82.98	[illegible]
		First Ratoons. 100 Acres and over.		
D. 37/45	144.6	13.74	83.35	[illegible]
B. 41227	4,239.4	14.44	83.34	[illegible]
B. 37161	8,445.7	14.52	83.38	[illegible]
B. 46378	135.2	14.46	83.13	[illegible]
B. 4098	1,279.4	14.83	84.51	[illegible]
B. 47225	887.9	14.72	84.00	[illegible]
B. 4362	1,673.9	14.80	83.54	[illegible]
B. 40105	101.2	14.19	81.59	[illegible]
Mixed	107.0	14.52	83.29	[illegible]
Pindar	112.3	14.87	84.56	[illegible]
		Under 100 Acres.		
B. 47147	.1	15.40	85.55	[illegible]
D. 19/46	2.0	11.86	73.70	6.60
B. 47419	1.6	15.40	85.56	[illegible]
B. 4744	12.0	14.21	85.57	[illegible]
B. 4736	1.1	13.88	82.90	[illegible]
B. 4[illegible]8	47.9	14.29	84.55	[illegible]
P.O.J. 3016	1.9	14.67	84.30	4.42
Eros	13.8	15.58	85.30	4.23
D. 158/41	30.7	13.51	81.76	4.09
B. 4373	27.7	14.11	82.67	[illegible]
Co. 419	21.2	14.92	84.33	[illegible]
D. 142/41	35.3	14.06	82.48	[illegible]
B. 4724	2.0	13.44	78.10	[illegible]
B. 43413	1.7	15.62	83.30	3.53
D. 62/43	60.2	12.82	81.63	[illegible]
B. 47379	24.7	14.52	83.83	[illegible]
Comus	2.9	15.12	84.44	2.79
D. 14/34	10.0	14.21	82.50	2.73
M. 134/32	11.8	14.97	84.56	2.68
M. 112/34	6.5	14.29	82.33	2.66
P.O.J. 2967	4.8	16.08	81.46	2.42
D. 18/46	2.0	12.99	75.70	1.55
		Second Ratoons. 100 Acres and over.		
Co. 419	222.0	14.50	83.01	3.96
B. 4362	1,180.5	14.54	83.05	3.53
B. 41227	7,337.1	14.66	83.88	3.50
B. 37161	3,867.9	14.57	83.42	3.42
D. 62/43	120.7	14.43	82.70	3.38
B. 4098	2,552.0	15.12	84.63	3.30
B. 47225	100.8	14.63	83.75	3.07
D. 37/45	203.1	14.45	83.38	2.93
B. 34104	556.9	14.51	83.47	2.77
		Under 100 Acres.		
B. 4373	.3	15.63	87.17	6.67
B. 47419	.6	15.12	86.06	5.17
B. 47213	2.6	14.44	83.69	3.92
B. 40105	15.3	14.79	82.98	3.79
D. 158/41	81.1	15.07	84.23	3.77
B. 46378	35.9	15.10	83.90	3.47
D. 142/41	56.9	14.35	83.04	3.36
Mixed	81.7	14.45	83.59	3.34
B. 43413	20.3	13.67	80.38	2.77
Pindar	7.8	14.10	83.44	2.67
D. 14/34	24.9	13.46	82.15	2.42
B. 44341	15.3	13.85	81.23	2.01
		Third Ratoons. 100 Acres and over.		
Co. 419	432.3	13.84	81.75	[illegible]
B. 41227	4,795.9	14.52	83.49	[illegible]
B. 37161	4,235.9	14.75	84.30	[illegible]
B. 4098	1,443.2	15.03	84.44	[illegible]
B. 4362	175.3	14.76	84.49	[illegible]
B. 40105	447.7	14.53	84.41	[illegible]
B. 34104	787.0	14.72	84.04	2.60
		Under 100 Acres.		
D. 62/43	67.4	14.37	83.70	4.20
D. 49/41	13.5	14.10	83.22	4.16
Mixed	61.0	14.92	83.72	[illegible]
B. 43253	10.8	15.18	84.15	3.65
B. 46378	5.9	14.47	82.85	[illegible]
D. 37/45	15.5	14.13	83.26	3.21
B. 47225	42.0	14.82	83.68	3.11
D. 142/41	52.8	14.28	83.74	[illegible]
D. 158/41	86.3	13.99	81.70	2.74
Diamond 10	10.5	15.87	85.10	2.60
D. 14/34	51.5	14.50	85.63	2.36
		Old Ratoons. 100 Acres and over.		
Co. 419	221.9	14.26	83.22	3.55
B. 41227	2,055.8	14.35	83.51	3.38
B. 37161	2,111.3	14.23	83.61	3.17
B. 4098	107.8	14.10	82.62	3.05
B. 34104	513.0	14.88	84.57	2.96
D. 142/41	115.5	14.06	82.45	2.40
		Under 100 Acres.		
Mixed	12.2	13.93	80.64	[illegible]
B. 4362	52.5	15.49	86.76	[illegible]
D. 62/43	9.5	13.85	82.30	[illegible]
B. 40105	30.5	13.10	81.84	[illegible]
D. 14/34	31.0	15.36	86.30	[illegible]
B. 47225	2.3	13.61	80.78	[illegible]
P.O.J. 2878	2.7	13.02	82.90	[illegible]

*Undue importance should not be attached to the order of merit when only a small acreage has been harvested.

THE VARIETY AND FERTILIZER POSITION OF THE SUGAR INDUSTRY, XXII.

BY

L. S. BIRKETT, *Sugar Agronomist.*

1. *Commercial Yields 1956.* The average yield in 1956, of tons commercial sugar per acre from all varieties on the sugar estates in British Guiana was 3.67 tons as compared with 3.40 tons per acre in 1955 and 3.14 tons per acre in 1954. The yields of the various varieties on the individual estates are presented in Table I which is drawn up on the usual regional basis.

The data in Table I are summarised for the major cane varieties in Table II.

TABLE II.—**Weighted Average Yields for Major Cane Varieties, 1956.**

Cane Variety.	Average Yield, Tons Sugar per Acre, 1956.					Crusher Juice.	
	Plants.	1 R.	2 R.	3 R.	Old R.	Pol. %.	Purity.
B.47258	4.43	4.63	3.92	—	—	14.24	83.38
B.46378	4.40	3.96	3.47	3.64	—	14.85	83.54
B.41227	4.30	3.96	3.50	3.40	3.38	14.44	83.55
Co.419	3.96	3.78	3.96	3.50	3.55	14.26	83.03
B.37161	4.24	3.96	3.42	3.28	3.17	14.47	83.64
B.4098	4.11	3.92	3.30	3.20	3.05	14.56	83.84
D.37/45 ..	4.09	4.04	2.93	3.21	—	13.89	82.96
B.4362	3.96	3.73	3.53	3.06	3.45	14.81	84.10
D.142/41	4.93	3.77	3.46	3.08	2.40	14.21	83.14
D.158/41	3.65	4.09	3.77	2.74	—	14.04	82.11
B.47225	3.97	3.86	3.07	3.11	2.22	14.47	83.25
Pindar	3.94	3.30	2.67	—	—	14.65	84.41
Colony Averages. (All Varieties).	4.17	3.92	3.42	3.26	3.23	14.37	83.69

2. *Varietal Composition of the 1956 Harvest.* The variety position for 1956 on a regional basis has been abstracted from returns supplied by the sugar estates. The data are summarised in Table III. The acreage occupied by the varieties which constitute the "other canes" category is given in Table IV.

B.37161 was the major variety reaped in 1957, the acreage reaped representing 39.5% of the total. B.41227 was the second major variety with 31.0% of the acreage reaped. The acreage in B.4098 was less than half of that reaped the previous year, while that in B.4362 also shewed a decline.

Of the newer varieties, B.47225 shewed a marked increase in acreage but it is doubtful whether this variety will be further extended to any appreciable degree in view of its performance in trials. On the other hand, planting of

TABLE III.—Acreage and Percentage Distribution of the Varieties Reaped in 1956.

Variety.	English Acres.	Percentage Distribution.				
		In West Demerara.	Along Demerara River Banks.	In East Demerara.	Berbice.	Colony.
B. 37161	29,134.8	18.3	29.8	16.8	35.1	39.5
B. 41227	22,901.5	11.7	20.6	22.3	45.4	31.0
B. 4098	5,959.7	13.8	16.7	9.1	60.4	8.1
B. 47225	3,668.6	33.2	10.5	26.9	29.4	5.0
B. 4362	3,433.5	28.2	28.1	33.9	9.8	4.6
B. 34104	1,951.6	.9	22.3	36.7	40.1	2.6
Pindar	1,269.1	4.8	4.9	48.6	41.7	1.7
Co. 419	1,011.1	1.1	60.9	12.4	25.6	1.4
B. 40105	625.0	—	.1	98.0	1.9	.8
B. 47258	508.7	25.5	35.8	27.7	11.0	.7
B. 46378	467.4	14.3	61.3	9.0	15.4	.6
D. 37/45	425.0	7.0	47.4	15.5	30.1	.6
B. 47379	334.7	21.7	1.1	77.2	—	.5
Other Varieties	2,137.1	16.2	20.3	25.2	38.3	2.9
Totals	73,827.8					100.0

TABLE IV.—Acreages of the Varieties Constituting the "Other Canes" Category.

Variety.	English Acres.		Variety.	English Acres.		Variety.	English Acres.	
	1956.	1957.		1956.	1957.		1956.	1957.
P.O.J. 2967	30	28	B. 43253	28	38	B. 49119	—	27
P.O.J. 3016	6	5	B. 43413	23	28	B. 50135	—	2
Co. 413	1	1	B. 44341	18	16	N.C.O. 310	56	55
Co. 421	36	39	B. 45137	2	24	N.C.O. 330	3	47
Comus	9	9	B. 46136	—	5	H. 37—1933	47	26
Eros	104	93	B. 46218	5	5	M. 134/32	23	23
D. 14/34	124	11	B. 4724	2	2	M. 112/34	19	19
D. 142/41	264	76	B. 4733	1	1	M. 213/40	5	5
D. 158/41	246	152	B. 4744	19	47	M. 423/41	3	3
D. 18/46	2	2	B. 47179	—	3	P.R. 1000	2	2
D. 19/46	2	2	B. 47262	—	1	Q. 28	—	8
B. 40102	125	125	B. 47419	82	99	Trojan	14	27
B. 40105	—	152	B. 48372	29	50	Mixed		
B. 42231	—	1	B. 4942	—	7	Varieties	322	439

TABLE V.--Percentage Distribution of the Varieties to be Reaped in 1957.

Variety.	Total English Acres in the Respective Cane Varieties.	Percentage Distribution.				
		In West Demerara.	Along Demerara River Banks.	In East Demerara.	In Berbice.	Colony.
B. 37161	34,796.4	16.2	28.0	13.7	42.1	43.0
B. 41227	25,978.8	12.0	17.8	25.7	44.5	32.1
B. 4098	4,277.3	12.5	14.9	8.5	64.1	5.3
B. 47225	4,033.7	31.0	13.1	27.2	28.7	5.0
B. 4362	3,404.3	32.9	21.9	34.9	10.3	4.2
B. 47258	2,284.7	8.4	29.5	14.2	47.9	2.8
Findar	1,827.4	3.9	23.0	37.6	35.5	2.3
Co. 419	745.4	1.5	71.8	7.8	18.9	.9
B. 47379	468.2	16.3	10.3	57.0	16.4	.6
B. 46378	431.1	15.0	62.5	5.0	17.5	.5
B. 34104	338.2	—	18.2	12.1	69.7	.4
D. 37/45	291.4	2.7	59.0	22.6	15.7	.3
D. 62/43	212.5	12.4	.3	—	87.3	.3
B. 4373	205.6	8.9	1.2	74.2	15.7	.2
Other Canes	1,711.2	15.1	16.5	32.8	35.6	2.1
Totals	81,006.2					100.0

B.47258 which has shewn up well in trials and which has also done well in commercial reapings in 1956 (vide Table II), is being pressed forward and this variety is likely to become a major one in the near future.

Pindar and B.47379 have shewn increases in acreage but the latter is unlikely to be extended to any great degree while Pindar is still undergoing testing.

3. *Acreages in the Various Varieties Scheduled for Reaping in 1957.* The acreages in the various varieties which are scheduled for reaping in 1957 are given in Table V. It will be noted that there is an increase in the total acreage scheduled for reaping. The acreages in B.37161 and B.41227 shew increases but their percentages of the total are much the same as in 1956.

B.34104 will almost have disappeared from commercial cultivations in 1957, while the acreages in other leaf-scald susceptible varieties have also decreased. Such varieties now only represent approximately 2½% of the acreage scheduled for reaping in 1957. The percentage of the acreage reaped in recent years in the various leaf-scald resistance categories is shewn in Table VI.

TABLE VI.

Category.	1953	1954	1955	1956	1957*
Very Susceptible	54.4	35.3	14.3	3.1	0.9
Susceptible	1.6	2.4	3.4	2.6	1.7
Susceptible-Tolerant ..	37.7	48.8	64.3	73.1	77.9
Tolerant	1.4	4.7	6.7	7.4	8.8
Resistant	4.9	8.8	11.3	13.8	10.7

* Scheduled for reaping.

4. *The Changing Variety Pattern.* The percentage of the acreage under the various cane varieties in the Colony over the period 1946-1957 is presented in Table VII.

5. *Cycle Age of the Crops.* Table VIII summarises the distribution of the acreage under cane in plants and the various categories of ratoons for the period 1948-1957.

TABLE VIII.

Cycle Age of the Crops.

Category.	Percentages.									
	1948.	1949.	1950.	1951	1952.	1953.	1954.	1955.	1956.	1957.
Plants	31.3	31.2	33.1	28.8	27.8	26.1	25.0	26.1	27.9	25.1
1st Ratoons	26.1	26.5	27.4	28.2	23.4	23.9	25.1	23.9	24.5	24.8
2nd Ratoons	24.5	24.8	23.3	24.4	23.7	22.4	23.0	24.1	23.3	23.7
3rd Ratoons	14.3	15.2	12.6	15.1	18.8	18.2	17.8	18.6	17.1	16.5
4th Ratoons	2.5	2.0	3.1	3.0	5.4	8.5	7.4	5.0	5.1	7.3
Old Ratoons	1.3	.3	.5	.5	.9	.9	1.7	2.3	2.1	2.6
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE VII.— Summary of the Percentage of the Acreage under the Major Cane Varieties, 1946—1957.

Variety.	Per cent. of Total Areas in the Colony.											
	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957
P.O.J. 2878	40.4	27.6	13.6	6.9	1.6	0.4	—	—	—	—	—	—
Diamond 10	25.4	21.6	14.4	8.4	3.1	0.9	0.4	—	—	—	—	—
D. 166/34	1.6	1.0	0.5	—	—	—	—	—	—	—	—	0.9
Co. 419	6.5	7.7	8.2	6.8	4.5	2.7	1.7	1.4	1.5	1.4	1.4	—
Co. 421	15.1	19.4	19.3	14.2	8.5	3.5	2.1	0.8	—	—	0.1	—
D. 14/34	6.4	11.3	17.4	20.6	20.2	15.0	8.6	4.9	2.5	0.8	0.2	—
B. 34104	1.6	7.6	22.6	39.8	58.4	67.4	60.2	47.7	31.0	13.2	2.9	0.4
D. 200/36	—	1.5	1.9	1.7	0.7	—	—	—	—	—	—	—
B. 4098	—	—	—	—	—	—	1.3	4.6	9.2	9.9	7.7	5.3
B. 37161	—	—	—	—	1.4	3.6	9.4	14.4	18.9	30.3	39.9	43.0
B. 40105	—	—	—	—	—	—	0.5	0.7	0.8	1.6	0.8	—
B. 41227	—	—	—	—	0.3	3.8	12.7	21.7	30.5	33.6	31.1	32.1
D. 142/41	—	—	—	—	0.2	1.4	1.6	1.6	1.3	0.8	0.3	—
D. 158/41	—	—	—	—	—	—	0.3	0.4	0.5	0.5	0.3	—
D. 62/43	—	—	—	—	—	—	—	0.3	0.4	0.5	0.4	0.3
B. 4362	—	—	—	—	—	—	—	0.5	2.0	4.4	4.5	4.2
D. 37/45	—	—	—	—	—	—	—	—	0.3	0.5	0.5	0.3
B. 46378	—	—	—	—	—	—	—	—	—	0.3	0.7	0.5
B. 47225	—	—	—	—	—	—	—	—	—	1.3	4.7	5.0
B. 47258	—	—	—	—	—	—	—	—	—	—	0.9	2.8
B. 47379	—	—	—	—	—	—	—	—	—	—	0.5	0.6
Pindar	—	—	—	—	—	—	—	—	—	—	1.6	2.3
B. 4373	—	—	—	—	—	—	—	—	—	—	—	0.2
Other Canes	3.0	2.3	2.1	1.6	1.1	1.3	1.2	1.0	1.1	0.9	1.5	2.1

6. *Fertilizers.* The quantities of, and the expenditure on, the various fertilizers used on the sugar estates in British Guiana for the years 1954, 1955 and 1956 are presented in Table IX.

The rate of application of nitrogen in the form of sulphate of ammonia remains at the usual standard rates although supplementary applications based on the results of foliar analysis are increasing in number. However, the rate of application of phosphates has increased as has that of potash although when considered in relation to the acreage under cane, the amounts of phosphatic and potasic fertilizers used at present must be regarded as being on a very modest scale.

The tonnage of limestone purchased in 1956 decreased appreciably mainly owing to the increase in cost of this item, and to a shortage of intercolonial shipping.

The expenditure on fertilizers and limestone by the industry exceeded three million dollars in 1956 ($3,019,686), which is 11.1% higher than that of the previous year ($2,721.664).

TABLE IX.— Values and Quantities of Fertilizers used on Sugar Estates, 1954—1956.

	Ammonium Sulphate.			Basic Slag.			Superphosphate.			Hyperphosphate.			Muriate of Potash.			Sulphate of Potash.			Limestone.			Urea.		
	1954.	1955.	1956.	1954.	1955.	1956.	1954.	1955.	1956.	1954.	1955.	1956.	1954.	1955.	1956.	1954.	1955.	1956.	1954.	1955.	1956.	1954.	1955.	1956.
Quantity—Tons	14,244	14,212	14,708	7	67	5	1,885	2,876	3,058	414	1,017	1,504	300	645	1,149	233	393	175	7,877	14,552	11,492	—	33	153
Value—$	1,686,106	1,708,630	1,871,436	547	1,600	1,196	302,412	478,676	519,603	35,219	88,193	138,492	34,762	74,891	134,412	27,727	45,720	22,373	182,856	315,652	292,157	—	8,562	40,017
Cost per Ton—$	118.37	120.22	127.24	77.39	24.00	260.02	160.46	166.43	169.90	85.10	86.75	92.08	116.04	115.74	116.94	118.79	116.29	127.20	23.22	21.69	25.42	—	255.95	261.79
% of Total Quantity	57.1	42.0	45.6	—	0.2	—	7.5	8.5	9.5	1.7	3.0	4.7	1.2	1.9	3.6	0.9	1.2	0.5	31.6	43.1	35.6	—	0.1	0.5
% of Total Value	74.3	62.8	62.0	—	0.1	—	13.3	17.6	17.2	1.6	3.2	4.6	1.5	2.7	4.5	1.2	1.7	0.7	8.1	11.6	9.7	—	0.3	1.3

REPORT ON THE SUGAR EXPERIMENT STATIONS FOR THE YEAR 1956.

SUGAR EXPERIMENT STATIONS' COMMITTEE.

The following members formed the British Guiana Sugar Experiment Stations' Committee for the year:—

The Director of Agriculture	.....	*Chairman.*
Mr. R. R. Follett-Smith	....	*Messrs. Bookers Sugar Estates, Ltd.*
Dr. H. Evans	....	*Messrs. Bookers Sugar Estates, Ltd.*
Mr. J. Baxter	....	*Messrs. Bookers Sugar Estates, Ltd.*
Mr. G. Bacs	....	*Messrs. Bookers Sugar Estates, Ltd.*
Mr. A. G. Harley	....	*Messrs. Sandbach Parker & Co., Ltd.*
Mr. E. S. Douglas	....	*Secretary.*

RESEARCH SUB-COMMITTEE.

The personnel of the British Guiana Sugar Experiment Stations' Research Sub-Committee for 1956 was as follows:—

The Director of Agriculture	*Chairman.*
Dr. H. Evans	*Messrs. Bookers Sugar Estates, Ltd.*
Mr. A. G. Harley	*Messrs. Sandbach Parker & Co., Ltd.*
Mr. L. S. Birkett	*Sugar Agronomist.*
Mr. R. O. Williams	*Chief Research Officer, Department of Agriculture.*
Mr. J. A. Pires	*Plant Pathologist, Department of Agriculture.*
Mr. J. A. Proctor	*Entomologist, Department of Agriculture.*

STAFF OF SUGAR EXPERIMENT STATIONS.

L. S. Birkett, D.I.C.T.A., A.I.C.T.A.	*Sugar Agronomist.*
C. Cameron	*Field Manager.*
H. I. Gomes	*Field Assistant.*
R. Dookun	*Field Assistant.*
K. Johnson	*Field Assistant.*
B. Bhagwandin	*Field Assistant (from May).*
K. Chung	*Statistical Assistant.*
S. Mangra	*Laboratory Assistant.*
S. Buchanan	*Typist.*

PERSONNEL CHANGES, LEAVE, Etc.

Mr. H. Naraine resigned his post as a Field Assistant on the 15th April.

Mr. B. Bhagwandin was employed as a Field Assistant on the 1st May.

Absences of the Staff from duty during the year were as follows:—

	Casual Leave.	Sick Leave.	Vacation Leave.
Mr. L. S. Birkett	—	—	5.5.56—19.9.56
Mr. R. Dookun	—	—	1.5.56— 1.8.56
Mr. K. Chung	—	7.8.56—21.8.56	18.1.56—20.2.56 29.5.56— 1.8.56
Mr. K. Johnson	6.12.56—24.12.56	—	—
Miss S. Buchanan	3.12.56—17.12.56	—	—

EXPERIMENTS.

The results of the experiments reaped during the year have been fully reported elsewhere in this Bulletin. They consisted of seventy-two variety trials, sixteen fertilizer and liming trials, and three experiments on the growth and ripening characteristics of four type varieties, a total of ninety-one experiments.

SEEDLINGS INTRODUCED, ETC.

Nineteen Cane Varieties for yield tests were received during the year from the Central Cane Breeding Station, Barbados. These were as follows:— B. 5401, B. 5411, B. 5449, B. 5452, B. 5463, B.5480, B.5490, B.54142, B. 54163, B. 54172, B. 54193, B. 54215, B. 54235, B.54237, B.54243, B.54253, B. 54262, B. 54277, B. 54281.

The following varieties were also received for testing for resistance to chlorotic streak disease: Pasoeroean, B. 45170, Tabongo, Local, B. 35218, Dacca, Kloet, B. 42234, B. 44130, Kassoer, B. 35276, B. 38272, B.37254, B.43235, Co. 270, B. 35247, B. 2935, B. 43337, B. 48392, B.43283, B.44341, 32 M.Q.657, B. 34102, B. 46199, B. 41211, P.O.J. 213, B.39254, B.3337, B.4454, B.40272, B. 46103, B. 49282, B. 39157, B. 35269 B. 39250, B. 37193, B. 40123, B. 3365, B. 42304, B. 3439, B. 40105, Co. 290, B. 35207, 28 N.G. 251.

In addition, "fuzz" was received from the same source from which 3,928 seedlings were raised.

The following seedlings were received from the Plant Quarantine Station, Trinidad: H. 38-2915, H. 38-4443, H. 39-3633, H. 39-5803, H. 39-7028, H. 40–3098, P.R. 905, Q. 28, Q. 47, Q. 56, Q. 57.

Mr. B. de L. Inniss, Botanist, B.W.I. Central Cane Breeding Station, visited the Station in November 1956, and assisted the staff of the Station in the selection of seedlings raised from Barbados fuzz forwarded in 1955. One hundred and seventy-nine of these seedlings have been selected for multiplication and from them selections for sorting trials will be made in due course.

During the year, one thousand seven hundred and fifty-three Demerara seedlings were obtained from crosses made at the Station. Selections will be made therefrom for sorting trials.

The position in respect to varieties under test and undergoing multiplication in 1956 is presented in Table I.

TABLE I.

Varieties under Test and Undergoing Multiplication Etc., at December 31st, 1956.

Year.	Barbados.		Demerara.		Other Countries.	
	In Test.	Under Multiplication.	In Test.	Under Multiplication.	In Test.	Under Multiplication.
Prior to 1940	2	—	—	1	30	48
1940	2	—	—	—	1	—
1941	—	—	1	—	1	1
1942	1	1	—	—	—	—
1943	3	3	3	—	—	—
1944	2	2	—	—	2	4
1945	2	2	8	1	—	—
1946	7	3	9	4	—	—
1947	9	1	—	—	—	—
1948	1	1	—	—	—	—
1949	21	21	—	—	—	—
1950	28	28	—	—	—	—
1951	22	22	—	—	—	—
1952	25	25	52	41	—	—
1953	17	17	*66	*168	—	—
1954	—	19	—	**50	—	—
1955	—	—	—	***246	—	—
Totals	142	145	139	511	34	53

* Demerara-Mauritius Seedlings (166), Demerara-Barbados Seedlings (68).

** Demerara Seedlings (4), Demerara-Barbados Seedlings (46).

*** Demerara Seedlings (67), Demerara-Barbados Seedlings (179).

FINANCE.

The sum of $63,200 was voted from the funds of the Sugar Experiment Stations' Committee for the operation of the Station during the year. The total expenditure in 1956 amounted to $59,991.75. Of this amount, $2,095.99 was spent on wages in connection with Leaf Scald Disease Investigations. This amount was refunded by Government. The actual expenditure for operating the Station in 1956 was therefore $57,895.76.

Receipts from assessments for the year amounted to $30,013.32; those from the sale of canes to $26,590 95, while miscellaneous receipts (exclusive of Government refunds) amounted to $680.47.

The quantity of canes sold in 1956 was 3,078.10 tons.

TABLE II.— **Statistics of Seedlings, Cane Distribution, Field Experiments, Cane and Soil Samples, Cane Sold and Visits Paid to Estates, 1947—1956.**

Year.	Seedlings Basketed.	Cane Cuttings Distributed.		Field Experiments.		Cane Samples.		Soil Samples Taken.	Cane Sold to Pln. Ogle.		No. of Visits to Estates.
		No. of Cuttings.	No. of Bags.	Started.	Harvested.	No. Taken and analysed.	Cane Crushed (Tons).		Deliveries (Tons).	Net Receipts. $	
1947	—	172,900	1,330	27*	64†	403	15	18	2,153.37	9,542.47	211
1948	—	347,230	2,671	37	54	476	12	290††	2,232.05	9,892.36	162
1949	—	310,180	2,386	28	62	953	22	14†††	2,535.19	15,892.34	154
1950	—	105,720	1,762	18	65	719	24	—	3,135.25	20,080.18	154
1951	—	123,540	2,059	14	71	654	22	—	3,344.50	24,443.64	89
1952	58**	174,420	2,907	32	62	1,102	30	—	2,794.20	22,274.61	80
1953	1,133***	104,640	1,744	27	63	1,015	37	—	3,345.20	31,255.78	88
1954	8,797****	132,120	2,202	33	80	1,076	31	—	3,524.49	28,698.86	82
1955	3,149*****	139,200	2,320	29	86	1,680	44	—	3,488.40	28,561.15	83
1956	4,815*****	79,620	1,327	29	91	1,903	48	—	3,078.50	25,908.13	70

1947 { *Includes 5 Maize Micro-plot Experiments.
1947 { †Includes 5 " " "
1948 ††Includes 201 Sent to I.C.T.A.
1949 †††Sent to Yale University.
1952 **Demerara Crosses.
1953 ***Mauritius "Fuzz".
1954 ****Barbados "Fuzz".
1955 *****Barbados "Fuzz" (2,982) and Demerara Crosses (167).
1956 *****Barbados "Fuzz" (3,928) and Demerara Crosses (887).

MISCELLANEOUS.

Statistics for recent years pertaining to the number of field experiments laid down and harvested, cane cuttings distributed, samples analysed, etc., are presented in Table II.

The Experiment Station was visited by a party of Students from the Imperial College of Tropical Agriculture, Trinidad, under Professor A. B. Killick. The Station was also visited by several persons from abroad and by those connected with the local sugar industry. Amongst the visitors from abroad were: Mr. C. T. D. Benill (England), Dr. and Mrs. O. P. Chatters (Canada), Mr. Subba Rao (India), Dr. H. Greene of Rothamstead Experiment Station, Mr. O. Rhind of the Colonial Office, Messrs. Haasges, Utrecht and Driebergen of the Albatros Fertilizer Co. (Holland), Mr. R. C. Parent of the Rhode Island Experimental Farm, Mr. W. N. Boller (U.S.A.), and Mr. B. de L. Inniss of the Central B.W.I. Cane Breeding Station, Barbados.

ACKNOWLEDGEMENTS.

As in the past, close contact was maintained between the Industry and the Staff of the Sugar Experiment Station.

The cordial co-operation of the Staff of the Sugar Estates and of the Sugar Experiment Station is very gratefully acknowledged.

L. S. BIRKETT,
Sugar Agronomist.